Q3 2021 – Q1 2023 CHRONIC RISK ASSESSMENT
COMMERCE CITY NORTH DENVER
COMMUNITY AIR MONITORING NETWORK

COMMERCE CITY, COLORADO

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EXECUTIVE SUMMARY

In response to feedback received by Suncor Energy (U.S.A.) Inc. (Suncor) through community engagement conducted in the fall of 2020, Suncor voluntarily committed to developing a continuous, near real-time air monitoring program to gain insight into air quality for neighborhoods in the vicinity of the Suncor refinery in Commerce City, Colorado. Montrose Environmental Group - Air Quality Services, LLC (Montrose) was contracted by Suncor to deploy, operate, and maintain the network in the Commerce City and North Denver (CCND) neighborhoods. Air monitoring was accomplished through three separate technical approaches: (1) continuous, near real-time monitoring for the following analytes[1]: carbon monoxide (CO), sulfur dioxide (SO_2), hydrogen sulfide (H_2S), nitric oxide or nitrogen oxide (NO), nitrogen dioxide (NO_2), particulate matter ($PM_{2.5}$), and total volatile organic compounds (VOCs); (2) periodic collection and laboratory analysis for the presence of specific VOCs from six-liter evacuated stainless steel ("Summa") canisters, and (3) periodic real-time air monitoring throughout neighborhoods using a mobile monitoring van to detect presence of specific VOCs and hydrogen sulfide (H_2S).

Health scientists from CTEH, LLC (CTEH®) (a subsidiary company of Montrose) performed a screening-level human health risk assessment based on the data collected by Montrose. This evaluation was consistent with federal and state risk assessment guidelines and was conducted to determine whether the average measured concentrations of individual or cumulative (combined) VOCs could potentially pose chronic (long-term) non-cancer or cancer health hazards. Acute health risks assessments were also completed and are presented in previous quarterly reports.

Approximately 234,000 one-hour rolling average concentration measurements and 126 Summa canister samples were collected in six CCND Air Monitoring neighborhoods using two specific data collection platforms. Summa canister samples were also collected in identical fashion from three reference sites (n=29) approximately 4 to 13 miles away from the Suncor facility to compare with the CCND neighborhood sample data. For each neighborhood, sampling location or reference site, the time weighted average (Summa canister data) or average (mobile monitoring van) concentration measured across seven quarters (third quarter of 2021 through first quarter of 2023) were compared to chronic non-cancer health Reference Levels (RL). This is called a chronic Hazard Quotient (HQ). The Hazard Indices (HI) represent cumulative risks from exposure to all detected chemicals measured in a given neighborhood. The HI is determined by adding together the HQs. According to United States Environmental Protection Agency (USEPA) guidelines, a chronic HQ or HI less than or equal to one (1) indicates that exposure is not likely to result in chronic non-cancer adverse health effects, even for sensitive sub-populations. Additionally, excess cancer risks were evaluated.

The non-cancer risk assessment resulted in the following overall findings:

- The data collected during this study phase did not indicate a potential for chronic non-cancer adverse health effects from exposure to the measured chemicals, both individually and cumulative, in either the CCND neighborhoods or the reference sites.

[1] An "analyte" is a material that a measuring device is designed to detect and measure. It may be a chemical gas, an airborne particle, or other type of material.

  - All estimated chronic HQ and HI values for non-cancer adverse health effects in each CCND neighborhood were below one.

  - All estimated chronic HQ and HI values for non-cancer adverse health effects at each reference site were also below one.

The cancer risk assessment showed the following:

- For average potential exposures, the calculated risks were within the range deemed by USEPA and referenced by Colorado Department of Public Health and Environment (CDPHE) as an acceptable risk.

  - All chemical-specific and total (cumulative) excess cancer risks fell between the USEPA and CDPHE-acceptable range of 1 in 10,000 to 1 in a million chances of excess risk for developing cancer above background risks, which are typically one in two for men and one in three for women in the United States.

- The average cancer risks estimated for CCND neighborhoods were very similar to the risks calculated for the three reference sites, suggesting similar cancer risks for an individual spending an entire lifetime in a CCND neighborhood or one of the reference sites outside of a CCND neighborhood.

1.0 INTRODUCTION

In response to feedback received by Suncor Energy (U.S.A.) Inc. (Suncor) through community engagement conducted in the fall of 2020, Suncor voluntarily committed to developing a continuous, near real-time air monitoring program to gain insight into air quality for neighborhoods in the vicinity of the Suncor refinery in Commerce City, Colorado. Montrose Environmental Group - Air Quality Services, LLC (Montrose) was contracted by Suncor to deploy, operate, and maintain the network in the Commerce City and North Denver (CCND) neighborhoods. Air monitoring was accomplished through three separate technical approaches:

1. Continuous, near real-time stationary monitoring for the following analytes: carbon monoxide (CO), sulfur dioxide (SO_2), hydrogen sulfide (H_2S), nitric oxide or nitrogen oxide (NO), nitrogen dioxide (NO_2), particulate matter ($PM_{2.5}$), and total volatile organic compounds (VOCs),

2. Periodic sample collection using Summa canisters and laboratory analysis for the presence of specific VOCs, and

3. Periodic real-time air monitoring throughout neighborhoods using a mobile monitoring van to detect presence of specific chemicals.

An "analyte" is a material that a measuring device is designed to detect and measure. It may be a chemical gas, an airborne particle, or other type of material.

Air monitoring data from approaches #2 and #3 have been used for screening level assessments of potential human health risk from acute-duration (hours to days) and chronic (lifetime) exposures to specific chemicals in the CCND community air. These acute risk assessments were based on data collected during a specific calendar quarter (third and fourth quarter of 2021 through the first quarter of 2023). Data collected using approach #1 was not included because the analytes measured for approach #1 (except for H_2S) do not have established health reference levels or cancer potency factors needed to perform a screening level health risk assessment. Risk associated with potential H_2S exposure was addressed in the assessment of the mobile monitoring van data. The risk assessments were developed assuming short-term (one to four hours) exposures to airborne analytes within a monitored CCND neighborhood. Reports of these acute risk assessments are available online at ccnd-air.com/documents.

This report contains a screening-level health risk assessment (non-cancer and cancer) of potential chronic exposures in CCND neighborhoods to VOCs and H_2S, building upon the previous 15-month chronic risk assessment with an additional two quarters worth of data. Non-cancer health outcomes vary widely by chemical, but the most sensitive health outcome for each chemical was used for this assessment. The risk assessment is based on the air monitoring data from approaches #2 and #3 collected periodically over the seven-quarter period (third quarter of 2021 through first quarter of 2023). The definition of chronic human exposures varies across regulatory agencies and scientific bodies. In general, toxicologists define chronic human exposures as repeated exposures occurring for many months to years[2]. The risk assessment presented herein provides estimates of lifetime inhalation non-cancer and cancer risks for CCND communities based on 21 months of measurements, assuming that the sampling periods

[2] Casarett & Doull's Toxicology: The Basic Science of Poisons. 7th Edition.

represent airborne chemical levels present over years of time. Refined estimates of chronic health risks may be developed as more data are collected through the CCND Air Monitoring program.

2.0 METHODS

2.1 AIR MONITORING METHODS

The chronic non-cancer and cancer health risk assessment was developed using air monitoring data from Summa canister analysis and mobile monitoring van tours in the CCND neighborhoods from the third quarter of 2021 through the first quarter of 2023. The following discussion briefly describes the two different air monitoring processes. Detailed air monitoring methods are provided in Appendix A.

Summa Canister Methods

Planned and VOC sensor-triggered air samples were collected periodically over a seven-quarter period. During that period, there were originally eight CCND locations, but that number expanded to ten (CM-1 through CM-10 shown in Figure 2-1) and three non-CCND reference sites (Denver Colorado Department of Public Health and Environment (CDPHE) office; Brighton, CO; junction of E470 and I-25) from which samples were collected for all quarters. The reference locations were selected so that air quality of CCND neighborhoods could be directly compared with air quality in areas not directly impacted by the various and multiple sources of chemicals found in the vicinity of the CCND neighborhoods. Planned one-hour air samples were collected by a field technician on pre-determined dates. Sensor-triggered samples were collected automatically when instantaneous total VOCs were detected on that location's total VOC sensor at an airborne concentration of one part per million (ppm) or higher for one minute or longer. Beginning in the third quarter of 2022, a single 7-day Summa cannister sample was collected from each of the ten sampling locations and reference locations. The decision to add a quarterly 7-day sample to the program was based on the need to better discriminate typical airborne VOC levels at a given location from atypical, transient levels of VOCs that may be observed in the shorter 1-hour planned or triggered samples, as described in the following paragraph. The addition of 7-day Summa canister samples to the program also provides data spanning a much longer time period than the quarterly planned or triggered 1-hour samples, which results in a more robust estimate of typical VOC levels over longer time periods and, subsequently, a more representative estimate of lifetime exposure concentrations and chronic risk assessment. Both the 1-hour and 7-day samples were used together to calculate chronic noncancer and cancer health risks, as described in Sections 2.2 and 2.3.

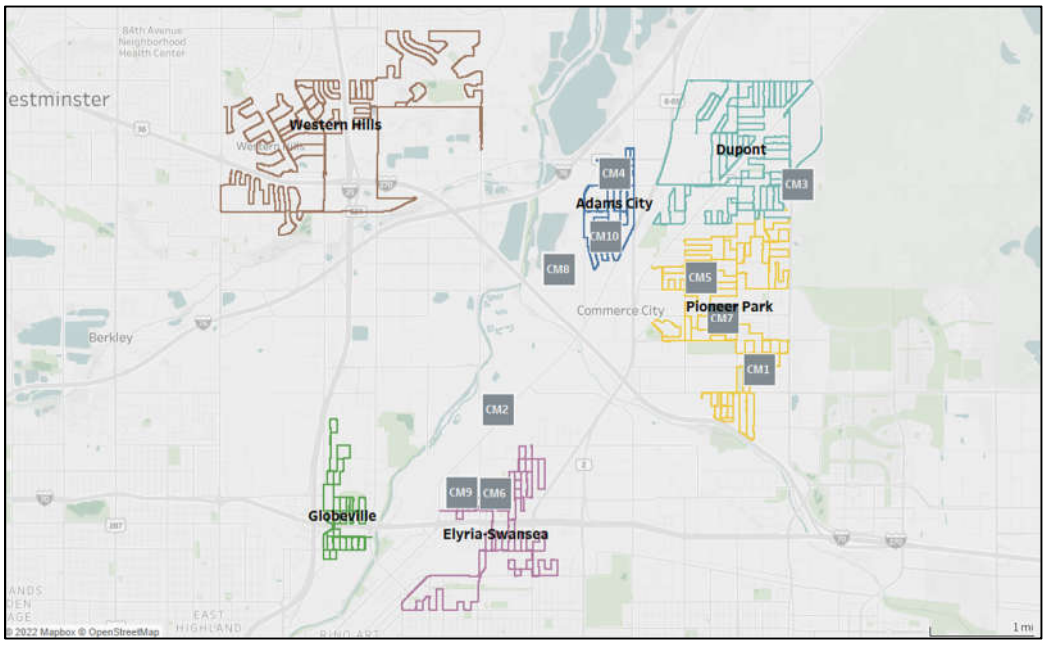
A total of 126 air samples were collected within the CCND neighborhoods (107 planned and 19 sensor-triggered). Planned samples included 1-hour and 7-day sample durations. An additional 29 samples were collected across three non-CCND community monitoring reference sites (1-hour and 7-day samples). In Q1 2023, the 7-day sample at JUNC location was not collected at the request of the property owner and a new location will be identified. All air samples were collected using Summa canisters and sent to an accredited laboratory for analysis of 59 VOCs in accordance with the USEPA methods TO-15 and TO-14.

Mobile Monitoring Van Methods

The mobile monitoring van contains the equipment necessary to identify and quantitate individual chemicals present in ambient air at ultra-low concentrations. This equipment measures and reports concentrations of 65 select chemicals (64 VOCs plus hydrogen sulfide) at sub-parts per billion (ppb) levels and as quickly as one measurement per second. During the five quarterly monitoring periods, the mobile monitoring van travelled a dense route through six CCND residential neighborhoods (colored routes shown in Figure 2-1) within a three-mile radius around the refinery. Accessible streets in the monitored neighborhoods were traversed at approximately 10 miles per hour while collecting a data point for each chemical every second. From the third quarter of 2021 through the first quarter of 2023, the mobile monitoring van sampled a total of six neighborhoods and collected over 386,636 data points, resulting in approximately 234,244 one-hour rolling average concentrations.

FIGURE 2-1

Mobile Monitoring Van Program Route and Summa Canister Sampling Locations in Six Neighborhood Areas



2.2 NON-CANCER SCREENING HEALTH RISK ASSESSMENT

CTEH conducted a screening-level public health risk assessment, consistent with federal risk assessment guidelines, to determine whether exposure to the detected concentrations of individual or cumulative (combined) chemicals in the air could potentially pose chronic (long-term) non-cancer and cancer adverse health effects. A tiered approach to the risk assessment was used. This approach involves one or more iterative steps (or tiers) being performed in which health risks may be calculated and evaluated multiple times.

The first tier of this risk assessment process is called a screening-level risk assessment. The conservative assumptions used for this level of risk calculation typically represent exposure conditions higher than would be reasonably expected. As such, an exceedance of an acceptable risk level (defined below) does not necessarily indicate that adverse health effects are likely. The Agency for Toxic Substances and Disease Registry (ATSDR) states, "*when health assessors find exposures higher than the MRLs (ATSDR's specific health-based reference levels), it means that they may want to look more closely at a site*"[3]. In other words, screening-level findings of an estimated exposure to a specific or combined set of chemical(s) being higher than its health reference level (RL) does NOT indicate an actual likelihood of adverse effects but does indicate a need to move to a second tier of analysis and refine the risk assessment process with more realistic detail to determine if an actual risk exists that needs to be mitigated.

Such calculations assume a person is constantly exposed to each detected chemical continuously for a chronic duration. If the resulting risk values indicate the lack of likely chronic adverse health effects under these worst-case conditions, then the risk assessment is complete. However, if the risk values suggest a potential for chronic adverse health effects, then a second tier of risk calculations are performed, but this time using more detailed assumptions about exposure that are still simple representations of the real world but are more realistic than the first-tier worst-case assumptions. Each successive tier represents a more complete characterization of exposure variability and/or uncertainty that requires a corresponding increase in calculation complexity and scientific level of effort.

The screening-level risk assessment reported here includes calculated chronic risks from exposure to individually measured chemicals as well as exposure to all measured chemicals at once (cumulative). For individual chemicals, a chronic non-cancer health risk value was calculated as the exposure concentration (EC) divided by the chemical-specific federal or state established chronic RL (Equation 1). The result is referred to as the hazard quotient (HQ).

Eq. 1 – Hazard Quotient (HQ) Equation

$$HQ = EC / RL$$

Where:

HQ= Hazard Quotient

EC= Summa canister time-weighted-average air concentration or mobile monitoring van average air concentration of the chemical.

RL= Chronic Health-based Reference Level (EPA, ATSDR, Cal EPA OEHHA, and TCEQ).

For the Summa canister data, the EC for each chemical was assumed to be the time-weighted average concentration of all 1-hour and 7-day samples collected across seven quarters at each location. Time-weighted averaging of airborne chemical concentrations is a method of combining air data sampled at different sampling durations. It allows for a more accurate estimate of airborne chemical levels over a longer time period while preventing sample results from shorter duration

[3] https://www.atsdr.cdc.gov/minimalrisklevels/#:~:text=The%20ATSDR%2C%20in%20response%20to,minimal%20risk%20levels%20(MRLs)

samples (1-hour samples in the case of the CCND program) to inappropriately dominate the average levels for the chronic duration assessment period. Time-weighted averages of VOC concentrations measured in all of the 1-hour planned and triggered samples and 7-day planned samples collected over seven quarters were calculated using Equation 2, per USEPA guidance[4].

Eq. 2 – Time-Weighted Average Exposure Concentration for Summa Canister Data

$$EC_{TWA} = \frac{\sum_1^n (C_j \times t_j)}{T}$$

Where:

EC_{TWA}= Time-weighted average exposure concentration over seven quarters at a single location

C_i = Chemical concentration from a single 1-hour or 7-day Summa canister sample

t_i = Sampling duration from a single 1-hour or 7-day Summa canister sample

T = Total sampling averaging time from all 1-hour and 7-day Summa canister samples over seven quarters at a single location

For the mobile monitoring van data, the estimated EC for each chemical was assumed to be the average of the one-hour rolling average concentration collected across seven quarters in an individual CCND neighborhood. A time-weighted average concentration is not calculated for the mobile monitoring van data because the 1-hour rolling averages used as the basis for EC are already equally weighted in terms of exposure duration. Use of the Summa canister EC_{TWA} assumes that airborne chemical levels measured at the monitoring location are representative of the entire neighborhood, while the ECs from the mobile monitoring van data represent a larger actual footprint of individual neighborhood exposure.

The RLs used to calculate the chronic HQs are previously established exposure levels below which no non-cancer adverse health effect in humans is expected. If available, RLs adopted by CDPHE were selected for use within this assessment and include USEPA chronic reference concentration (RfC) and residential screening levels (RSLs); ATSDR chronic minimum risk levels (MRLs); California EPA's Office of Environmental Health Hazard Assessment (OEHHA) chronic risk levels; and Texas Commission on Environmental Quality (TCEQ) chronic, long-term air monitoring comparison values (AMCV). If the chemical was not listed by CDPHE, a federal and state recommended hierarchy for selection of RLs was used[5]. Where the mobile monitoring van was unable to differentiate between specific chemicals, the lowest, most health-protective RL of the "isomer" group was selected for use in that analysis. Group details are provided in the appendix.

Health risks from potential cumulative exposures to all detected chemicals were calculated by adding together each individual chemical's average chronic HQ calculated over seven quarters for a given neighborhood. The sum of all the individual chronic HQs is called a chronic Hazard Index (HI). Adding together all the chronic HQs is also a very health-conservative approach

[4] USEPA (2004). Air Toxics Risk Assessment Reference Library. Volume 1 Technical Reference Library
[5] CDPHE (2019) Memo: Updated acute and chronic health guideline values for use in preliminary risk assessments (referred to as "FA2019 HGVs"); https://drive.google.com/file/d/1P2KEvu0MFiyzQAOQtjQUclqR-WGh1bEX/view

because it assumes that all the measured chemicals exert an adverse effect on the body in a similar manner, which is rarely the case.

A chronic HQ or HI of less than or equal to one is an indication that the estimated exposure is likely to be without an appreciable risk of adverse chronic non-cancer health effects, even for sensitive sub-populations. The potential for adverse health effects increases as chronic HQ or HI increase above one, but it is not known by how much. Chronic HQ or HI values of greater than one would prompt a second-tier risk assessment beyond the screening-level assessment.

According to the USEPA and ATSDR, the federal agencies that establish these RLs, these values "*are set below levels that, based on current information, might cause adverse health effects in the people most sensitive*."[6] This is because RLs are based on observed toxicity in human or animal studies with an added safety factor to account for uncertainties and variabilities in the toxicity data. For example, ATSDR identified the lowest observed adverse effect level (LOAEL) for chronic exposure to benzene as 100 parts per billion (ppb), based on a human epidemiology study of adult workers. ATSDR then applied a combined safety factor of 3 to derive the final RL to account for uncertainty in sensitivity to benzene's chronic effects across the general human population. Therefore, it is scientifically incorrect to assume that all real-world exposures to an analyte at levels at or slightly higher than a RL will likely result in an adverse effect.

Using the average concentration for the EC (mobile monitoring van data) or EC_{TWA} (Summa canister data) across quarters assumes that airborne levels of a chemical vary over time similarly to what was observed during Summa canister sampling and mobile monitoring van sampling. It is also assumed that an individual occupies the monitored neighborhood and breathes this concentration continuously for months to years (chronic exposure)[7].

2.3 CANCER SCREENING HEALTH RISK ASSESSMENT

CTEH also conducted a screening-level health risk assessment to determine whether chronic inhalation exposure to the detected concentrations of individual or cumulative chemicals in the air could potentially cause the development of cancer. The cancer risk assessment was also performed using methods consistent with federal risk assessment guidelines. Among the chemicals measured by Montrose using Summa canisters and the mobile monitoring van, there are five chemicals that are categorized by various regulatory agencies (USEPA, OEHHA, and TCEQ) as probable or possible carcinogens: benzene; ethylbenzene; 1,3-butadiene; isoprene; and tetrachloroethene. Cancer risk for this assessment is defined as the likelihood that "*a person may develop cancer over the course of their lifetime as a result of the exposures under study. This risk is the incremental risk of cancer from the exposure being analyzed that is above the risk that the individuals in the population have already (i.e., due to non-air toxics related issues)*"[8].

Cancer risks were calculated for a hypothetical person occupying a CCND neighborhood and any one of the three non-CCND reference sites for their entire lifetime. Risks from a lifetime exposure to each of the five carcinogenic chemicals listed above and the total (cumulative) risks from exposure to all five simultaneously were calculated. Separate calculations of risk were performed

[6]https://www.atsdr.cdc.gov/mrls/index.html#:~:text=ATSDR%20uses%20the%20no%20observed,to%20such%20substance%2Dinduced%20effects.
[7] Casarett & Doull's Toxicology: The Basic Science of Poisons. 7th Edition.
[8] USEPA (2004). Air Toxics Risk Assessment Reference Library. Volume 1 Technical Reference Library.

for Summa canister data and mobile monitoring van data. The reason for separate calculations based on canister and van data is discussed below.

The difference in approach to calculating non-cancer risk (as described in Section 2.2) and cancer risk is based on toxicological understanding of the mechanisms by which chemicals exert their toxic effects on the body. Non-cancer effects occur when a chemical concentration in the body surpasses the body's ability to either clear the chemical from the affected tissue or organ or to compensate for the presence of the chemical (initiating protective biochemical processes to offset the effect of the chemical). The toxic threshold is the exposure level and duration above which the chemical exposure overcomes the body's ability to compensate. Thus, any exposure below the toxic threshold is assumed to be dealt with by the body's protective processes and will not cause an adverse health effect. Cancer effects are different from non-cancer effects because the carcinogen affects the body's ability to control cell growth, either by directly or indirectly changing the body's genetic control mechanisms. Theoretically, a single change of genetic material or genetic controls could cause cell growth and replication to occur uncontrollably, leading to tumor formation. However, the body's many built-in processes to identify and reverse such occurrences are very effective in countering such insults to genetic control. Chemical carcinogen-caused cancers may occur due to exposures levels that are too high and occur for too long of a duration for the body to reverse the genetic damage and loss of control of cell predication. A person's inherited ability to correct damage to cell genetics may also impact their risk of developing cancer by chance or from chemical exposure.

Scientists studying chemical carcinogenesis (the ability of a chemical to cause cancer) have debated for decades whether certain chemical carcinogens have a threshold exposure below which genetic loss of control (and, thus, cancer) will not happen. For this reason, risk assessment methods used by regulatory bodies conservatively assume that a risk exists for a carcinogen to cause cancer to develop, even at extremely low exposure levels. For environmental exposures, such assumed risks from ppb-levels of inhalation exposures would take decades of exposure to result in cancer. Cancer risks are calculated not by comparing exposure to a health reference level to see if an exceedance has occurred, but by multiplying by a cancer potency factor to estimate a likelihood of cancer occurring over a lifetime. Cancer potency factors for inhaled carcinogens have been determined by USEPA and other federal and state regulatory agencies. These potency factors are based on observed tumor development in laboratory animal and human epidemiology studies.

Just like non-cancer health reference levels, cancer potency factors include adjustments to err on the side of caution when there are uncertainties in differences between animal and human sensitivity to a carcinogen as well as differences between humans with genetic sensitivity based on health status, genetic background, and stage of life (very young or very old). Thus, a cancer risk estimate has built into it a conservative level of safety and likely overestimates actual risk.

Cancer risks calculated in this assessment are for inhalation of airborne carcinogens only. Equation 3 (from USEPA guidance[9]) was used to calculate each chemical-specific cancer risk.

Eq. 3 – Excess Cancer Risk Estimate Equation

$$\text{Cancer Risk} = EC \text{ (or } EC_{TWA}) \times IUR$$

[9] USEPA (2004). Air Toxics Risk Assessment Reference Library. Volume 1 Technical Reference Library

Where:

Cancer Risk = Excess risk of an individual developing cancer over a lifetime, or URE (unit risk estimate).

EC= Summa canister time-weighted-average air concentration (eq. 2), or mobile monitoring van average air concentration of the chemical.

IUR= Inhalation Unit Risk estimate (EPA, OEHHA, and TCEQ).

The Inhalation Unit Risk (IUR) estimate for each chemical are the cancer potency factors used for this assessment. An IUR is the increased likelihood of cancer development per unit amount of chemical exposure. For example, if a chemical has an established IUR of 1.0 x 10^{-6} per ppb, then a person is estimated to receive an additional one chance in a million of developing cancer for every increase in 1 ppb of lifetime exposure to that chemical. Thus, a lifetime continuous exposure to 5 ppb of the chemical in air would result in an increased estimate of five chances in a million (above their background cancer risk) that they might develop cancer from that exposure. Likewise, if a chemical has an established IUR of 1.0 x 10^{-4} per ppb, this chemical is considered 100-times more potent a carcinogen than the previous one, and then a person is estimated to take on an additional one chance in one hundred thousand of developing cancer for every increase in 1 ppb of lifetime exposure.

The IURs used for cancer estimates in this risk assessment (and in CDPHE preliminary risk assessments[10]) and their sources, follow:

- Benzene: 7.8 x 10^{-6} per µg/m^3 = 2.5 x 10^{-5} per ppb (USEPA IRIS)
- 1,3-Butadiene: 3.0 x 10^{-5} per µg/m^3 = 6.7 x 10^{-5} per ppb (USEPA IRIS)
- Ethylbenzene: 2.5 x 10^{-6} per µg/m^3 = 1.1 x 10^{-5} per ppb (Cal EPA OEHHA)
- Tetrachloroethane: 2.6 x 10^{-7} per µg/m^3 = 1.7 x 10^{-6} per ppb (USEPA IRIS)
- Isoprene: 2.2 x 10^{-8} per µg/m^3 = 6.1 x 10^{-8} per ppb (TCEQ)

It is important to understand that the conservative nature of IURs should *not* be interpreted as meaning one in 1,000,000 people *will* get cancer if the risk of 1 x 10^{-6} is calculated. According to USEPA, "*Because IURs are typically upper-bound estimates, actual risks may be lower than predicted…, and the true value of the risk is unknown and may be as low as zero. These statistical projections of hypothetical risk are intended as screening tools for risk managers and cannot make realistic predictions of biological effects. Such risk estimates also cannot be used to determine whether someone who already has cancer is ill because of a past exposure*."[11]

This risk assessment examined the excess cancer risk for each neighborhood, Summa canister sampling site, and reference site. The variation in chemical levels measured in Summa samples (comparing 1-hour with 1-hour samples and comparing 7-day samples to other 7-day samples) was small across the study period. The mobile monitoring van data set for the seven quarters of the study period consists of thousands of one-hour concentrations of each chemical in each

[10]CDPHE (2019) Memo: Updated acute and chronic health guideline values for use in preliminary risk assessments (referred to as "FA2019 HGVs"); https://drive.google.com/file/d/1P2KEvu0MFiyzQAOQtjQUclqR-WGh1bEX/view

[11] USEPA (2004). Air Toxics Risk Assessment Reference Library. Volume 1 Technical Reference Library

neighborhood. In the original 9-month chronic risk assessment, the exposure metric for the risk calculations was the average of each of the three quarters' maximum 1-hour mobile van averages for each neighborhood. The metric used for the present 21-month risk assessment is the average of each of the seven quarter's 1-hour averages. The reason for the change in exposure metric is because an extra measure of conservatism was warranted for extrapolating three quarters of exposure data to lifetime excess cancer risk. Secondly, with seven quarters and thousands of additional hourly rolling average monitoring van data, using the average of 1-hour averages provides for a more realistic estimate of neighborhood-wide exposure conditions.

3.0 RESULTS

3.1 NON-CANCER RISK

The time-weighted average concentration (Summa canister data) or 1-hour rolling average concentrations (mobile monitoring van data) were calculated from data collected across seven quarters for each neighborhood, sampling locations, and reference sites. These calculated values were compared to chronic RLs to derive chronic HQs for each chemical of interest. To evaluate cumulative risk, the estimated HI values were calculated by adding together the HQs of all detected chemicals measured. According to USEPA guidelines, a chronic HQ or HI less than or equal to one (1) indicates that exposures are likely to be without any chronic non-cancer adverse health effects, even for sensitive sub-populations. Overall, all calculated HQs (Appendix B) and HIs (Table 3-1 and Figures 3-1 and 3-2) in each neighborhood, sampling site and reference site were below one.

TABLE 3-1

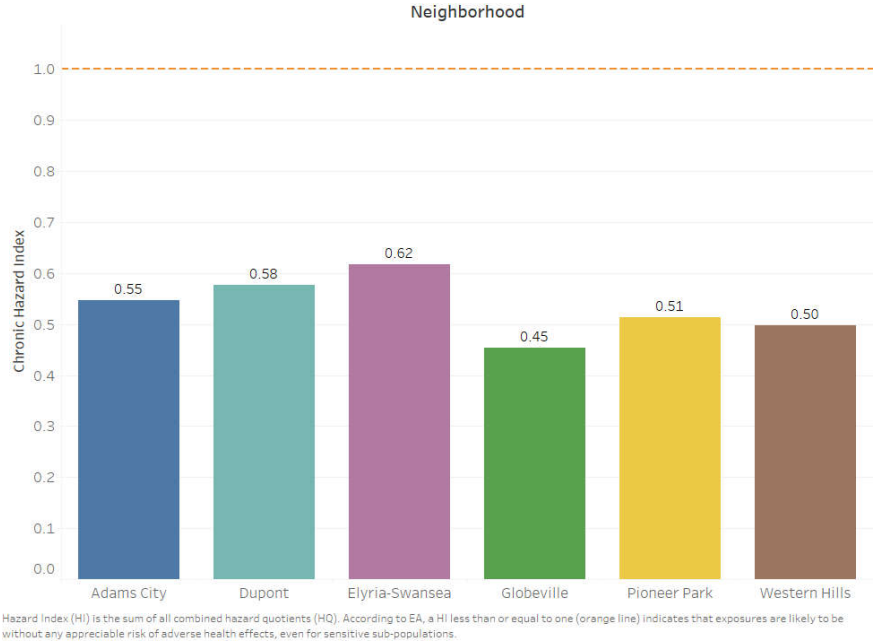
Number of Measurements and Chronic Non-Cancer Hazard Indices from Mobile Monitoring Van and Corresponding Summa Canister Sampling sites (Q3 2021 – Q1 2023)

Mobile Van Sampling Neighborhood	No. of mobile van sampling hours (rolling one-hour averages)	Chronic Hazard Index	CCND Monitoring Sites	Total no. of analytical samples	Chronic Hazard Index
Adams City	27,421	0.55	**CM-4 Adams Middle School**	13	0.47
			CM-8 Monroe	11	0.31
			CM-10 Alsup	10	0.32
Dupont	54,105	0.58	**CM-3 Adams High School**	16	0.22
Pioneer Park	56,887	0.51	**CM-1 Rose**	15	0.37
			CM-5 Central	14	0.42
			CM-7 Kearney	13	0.35
Elyria-Swansea	25,422	0.62	**CM-2 Suncor RBC**	12	0.35
			CM-6 Focus	11	0.27
			CM-9- 48th and Race	11	0.41
Globeville	24,768	0.46	-	-	-
Western Hills	45,641	0.50	-	-	-

FIGURE 3-1
Chronic Non-Cancer Hazard Indices for CCND Sampling Locations and Reference Sampling Locations (Summa Canisters Q3 2021 – Q1 2023)

Hazard Index (HI) is the sum of all combined hazard quotients (HQ). According to EPA, a HI less than or equal to one (orange line) indicates that exposures are likely to be without any appreciable risk of adverse health effects, even for sensitive sub-populations.

FIGURE 3-2
Chronic Non-Cancer Hazard Indices for CCND Neighborhoods (Mobile Monitoring Van Data Q3 2021 – Q1 2023)



3.2 CANCER RISK

Cancer risks were estimated for five chemicals which have IUR values available. The total (cumulative) cancer risks were calculated by adding together the chemical-specific risks for each neighborhood or reference site. The results of these calculations are shown in Tables 3-2 and 3-3 and in Figure 3-3.

TABLE 3-2
Chemical-Specific and Total Cancer Risk Estimates by Sampling Site from Summa Canister Data

Cancer Risk Estimates							
Location		**1,3-Butadiene IUR: $6.7x10^{-5}$**	**Benzene IUR: $2.5x10^{-5}$**	**Ethylbenzene IUR: $1.1x10^{-5}$**	**Isoprene IUR: $6.1x10^{-8}$**	**Tetrachloro-ethene IUR: $1.7x10^{-6}$**	**Total Risk Estimate**
CCND Sampling Sites	**CM1 – Rose**	4.3E-06	6.5E-06	1.1E-06	3.8E-09	8.7E-08	**1.2E-05**
	CM2 – RBC	4.7E-06	6.4E-06	8.8E-07	1.7E-09	9.3E-08	**1.2E-05**
	CM3 – Adams High School	2.0E-06	5.0E-06	6.4E-07	1.9E-09	5.2E-08	**7.6E-06**
	CM4 – Adams Middle School	7.7E-06	8.3E-06	1.2E-06	2.3E-09	1.4E-07	**1.7E-05**
	CM5 – Central	5.1E-06	5.8E-06	8.9E-07	1.7E-09	8.3E-08	**1.2E-05**
	CM6 – Focus	3.7E-06	5.3E-06	9.0E-07	1.8E-09	4.9E-08	**9.9E-06**
	CM7 – Kearney	4.7E-06	6.0E-06	8.5E-07	1.6E-09	8.1E-08	**1.2E-05**
	CM8 – Monroe	4.0E-06	6.2E-06	8.1E-07	1.7E-09	1.0E-07	**1.1E-05**
	CM9- 48th and Race	5.1E-06	6.5E-06	1.6E-06	1.6E-09	8.8E-08	**1.3E-05**
	CM10- Alsup Elementary	5.4E-06	6.3E-06	8.9E-07	1.7E-09	8.3E-08	**1.3E-05**
Reference Sites	**BFD- Brighton**	3.5E-06	4.7E-06	6.1E-07	1.7E-09	7.0E-08	**8.8E-06**
	CAMP- Denver	5.8E-06	1.1E-05	9.5E-07	1.7E-09	7.4E-08	**1.8E-05**
	JUNC- E470/I25	4.2E-06	3.8E-06	7.4E-07	1.9E-09	8.3E-08	**8.8E-06**

Inhalation unit risk (IUR) value is converted to per ppb. One significant figure is displayed for consistency with EPA's reporting of IUR's.

TABLE 3-3
Chemical-Specific and Total Cancer Risk Estimates by Neighborhood from Mobile Monitoring Van Data

Cancer Risk Estimates						
CCND Neighborhood	**1,3 Butadiene IUR: $6.7x10^{-5}$**	**Benzene IUR: $2.5x10^{-5}$**	**Ethylbenzene* IUR: $1.1x10^{-5}$**	**Isoprene IUR: $6.1x10^{-8}$**	**Tetrachloroethene IUR: $1.7x10^{-6}$**	**Total Risk Estimate**
Adams City	2.5E-06	6.2E-06	9.7E-06	1.9E-08	2.5E-08	**1.9E-05**
Dupont	2.5E-06	6.7E-06	4.4E-06	1.3E-08	1.3E-08	**1.4E-05**
Elyria-Swansea	3.8E-06	7.3E-06	7.9E-06	1.3E-08	4.1E-08	**1.9E-05**
Globeville	3.0E-06	7.4E-06	6.3E-06	1.6E-08	1.6E-08	**1.7E-05**
Pioneer Park	2.8E-06	5.2E-06	4.8E-06	1.3E-08	2.0E-08	**1.3E-05**
Western Hills	2.6E-06	6.4E-06	7.7E-06	1.5E-08	3.1E-08	**1.7E-05**

Inhalation unit risk (IUR) value is converted to per ppb. One significant figure is displayed for consistency with EPA's reporting of IUR's.
*Risk estimates may include multiple isomer groups (ethylbenzene and xylenes) since they are unable to be differentiated in this analysis.

It is helpful to understand the cancer risks calculated in this report in the context of typical background cancer risks in the United States (U.S.) For federal regulatory agencies in the U.S., a 10^{-4} excess cancer risk level is the upper end of the generally acceptable risk range of 10^{-6} (one in 1,000,000 excess cancers) to 10^{-4} (one in 10,000 excess cancers) above background, as discussed in the National Contingency Plan (NCP), 40 CFR 300.430[12]. Those values may be compared with the average lifetime likelihood of developing cancer for any reason (environmental

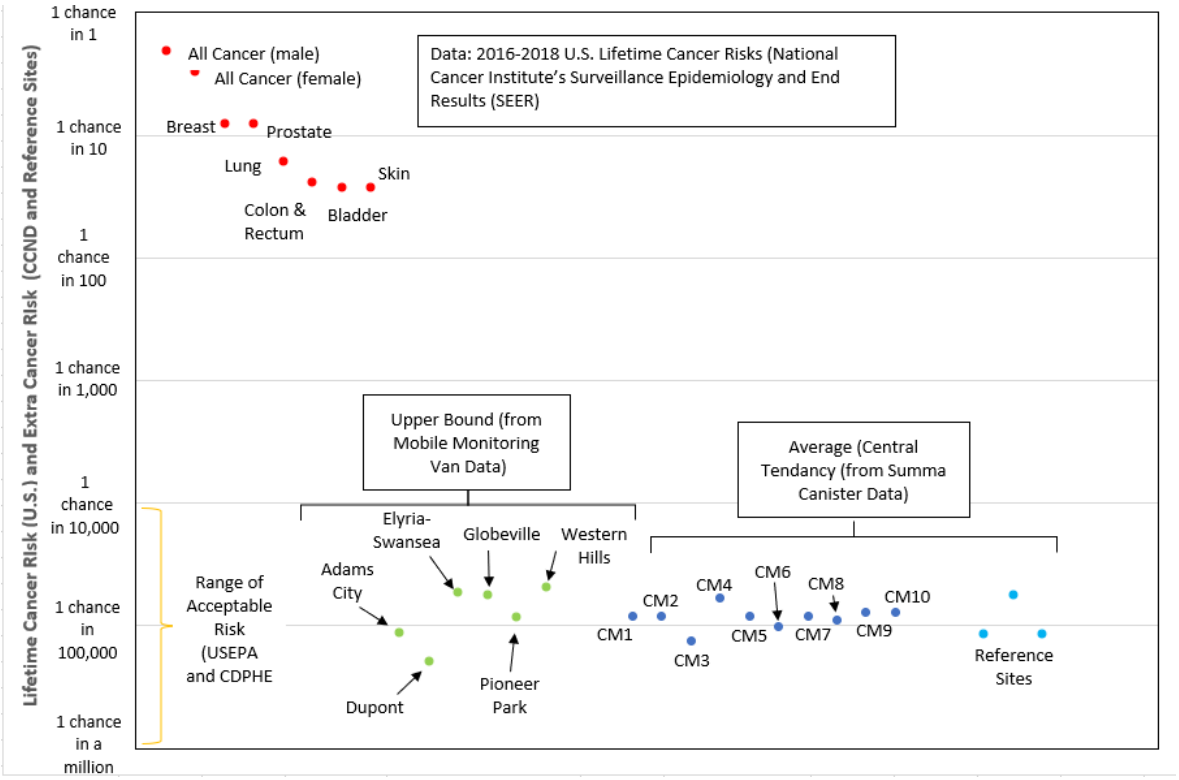
[12] 40 CFR Ch. I (7–1–11 Edition) § 300.430. https://www.govinfo.gov/content/pkg/CFR-2011-title40-vol28/pdf/CFR-2011-title40-vol28-sec300-430.pdf

factors, genetic heredity, lifestyle choices, etc.). According to data from the National Cancer Institute's Surveillance Epidemiology and End Results (SEER) database from 2016 through 2018, the estimated lifetime likelihood of a person living in the U.S. developing cancer is one in two for men and one in three for women[13]. Thus, an additional one in 10,000 to one in 1,000,000 cancer risk does not add appreciable risk to an individual's overall chance of developing cancer over a lifetime.

The total excess cancer risks from the chemicals measured in the different CCND neighborhoods/ sampling sites are within the EPA acceptable risk range and similar to the reference sites (Table 3-2 and Figure 3-3). Based on these data, lifetime cancer risks are similar between the CCND and reference sites.

FIGURE 3-3

Comparison of Lifetime Cancer Risks in the U.S. with Estimated Excess Cancer Risk Based on 21 Months of CCND Air Program Data



[13] https://www.cancer.org/healthy/cancer-causes/general-info/lifetime-probability-of-developing-or-dying-from-cancer.html

4.0 UNCERTAINTY EVALUATION

Scientific uncertainty is inherent in each step of the risk assessment process because all risk assessments incorporate a variety of assumptions and professional judgments. Therefore, the hazard estimates presented in this assessment are estimates of risk due to several assumptions about exposure and toxicity. This screening-level risk assessment relied on a combination of health-protective exposure scenarios and input values (i.e., lifetime exposure estimates, assumed similar toxic effect from all chemicals measured). Because of these assumptions, the estimates of chronic non-cancer hazards and cancer risks are themselves uncertain but likely to over-estimate actual risk.

The chronic non-cancer and cancer risk assessments for the 21-month period are based on data collected on specific dates using the Summa canister and mobile monitoring van platforms. This assumes that the samples collected over a 21-month period represent estimated EC that a person that would breathe continuously over a lifetime (24 hours a day, 7 days a week).

In addition, risks calculated from the mobile monitoring van data have some level of uncertainty because the van's instrumentation does not differentiate some of the detected isomers (see Appendix A). For the sake of simplicity, the concentration and HQ values shown in Appendix B refer to generic names for a group of specific isomers. Risks from the isomer groups are calculated based on health RL for the isomer representing the isomer group, which may conservatively overestimate risk from exposure to the isomer group. This is of particular importance for cancer risk estimates for ethylbenzene. The PTR-ToF-MS in the van used to measure ethylbenzene cannot distinguish it from the three isomers of xylene due to structural similarities. Any measurement of xylenes may be comprised of all xylenes, all ethylbenzene, or some combination of the two. The Summa canister data consistently show total xylene levels to be higher than ethylbenzene. Thus, without a suitable method to separate ethylbenzene from the mobile monitoring van's xylenes measurements, the conservative assumption is that these measurements are completely ethylbenzene. This instrument limitation overestimates the cancer risk from ethylbenzene exposure.

The inclusion of concentration values for non-detected chemicals in Summa canister samples introduces some level of uncertainty into the estimated EC. For CCND acute risk assessments, non-detection measurements are conservatively treated by using the laboratory's method detection limit (MDL: the lowest concentration that an instrument may reliably identify a chemical) as a surrogate concentration, assuming that the chemical did, in fact, exist in the sampled air at just below the MDL concentration. However, for chronic risk assessment, the use of a chemical's MDL for all the non-detected chemicals may disproportionately add uncertainty because of time-weighted averaging of numerous samples over a long period of time that have non-detects. To balance additional uncertainty with adequate public health protection, non-detected chemicals in the chronic risk assessment are represented in the EC_{TWA} as one-half of the MDL. This choice represents the fact that there is as much likelihood that the chemical is not present at all (actually zero) as there is that the chemical is in the sample at just under the MDL. The use of ½ MDL as a surrogate concentration is recommended by USEPA.[14]

[14] USEPA Data Quality Assessment: Statistical Methods for Practitioners https://www.epa.gov/sites/default/files/2015-08/documents/g9s-final.pdf

Additional uncertainty related to health-based reference levels or carcinogen inhalation unit risk values is also present. For many analytes, these values are derived from a limited set of data and are derived using a variety of assumptions, such as information from animal studies, extrapolations from experimental high-doses to low-doses, or data from other similar chemicals. However, all derivations ensure a margin of safety and as such, are intentionally conservative.

This risk assessment did not address past or present health outcomes associated with current or past exposures. As such, this risk assessment cannot be used to make realistic predictions of biological effects and/or used to determine whether someone is ill (cancer or other adverse health effects) due to past or current exposures.

This risk assessment was limited to inhalation exposures from outdoor exposures to all potential sources.

5.0 CONCLUSIONS

In conclusion, the data collected during this seven quarter study phase did not indicate a potential for chronic non-cancer adverse health effects from exposure to the measured chemicals, both individually and cumulative. The result of all HQ and HI calculations falling below one (1) indicates the lack of potential adverse chronic non-cancer health effects, even for sensitive sub-populations. These conclusions were drawn from two different types of data collection platforms (Summa canister sampling and mobile monitoring van sampling).

Cancer risks for individual and combined chemicals were below EPA's upper acceptable cancer risk range and were similar to risk estimates from measurements at reference sites, suggesting similar cancer risks for an individual spending an entire lifetime in a CCND neighborhood or one of the reference sites outside of the CCND neighborhoods.

Further, the chemical-specific and total (cumulative) estimates of lifetime excess cancer risk from exposure to the five potential carcinogens that were measured in the CCND neighborhoods, sampling locations and reference sites all fell between the range of 1 in 10,000 to 1 in a million chances of developing cancer above background risks, which is typically one in two for men and one in three for women in the U.S.

Respectfully Submitted:

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Senior Toxicologist
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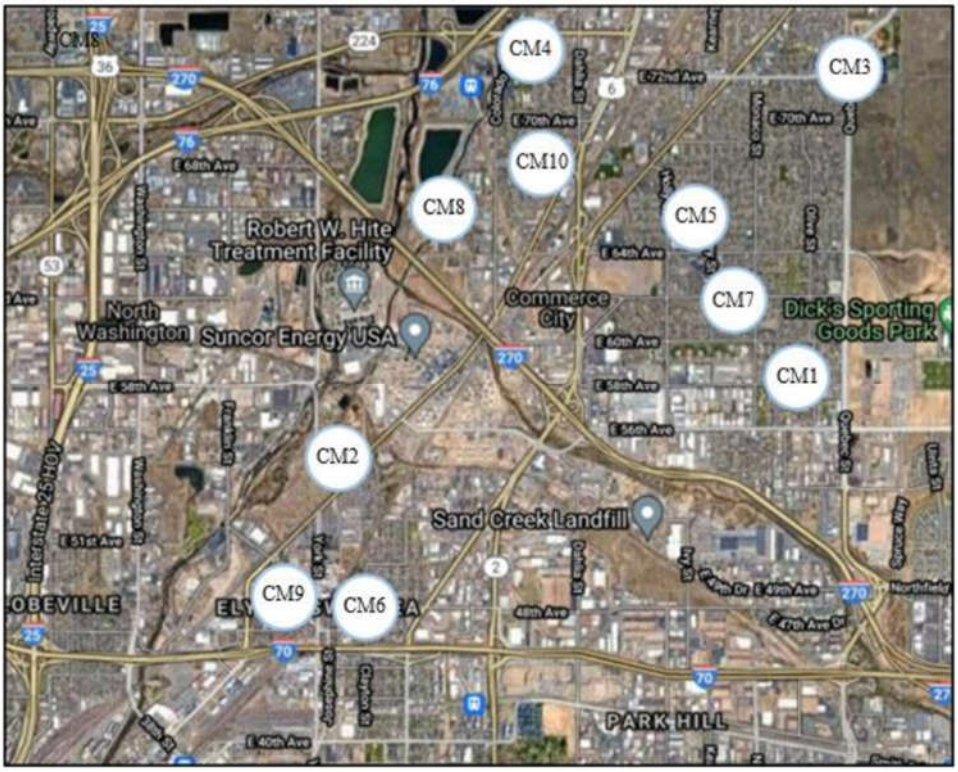
Appendix A – Air Monitoring Collection Method Details

Summa Canister Collection Methods

Ten monitors and Summa canister sampling locations were positioned throughout the Commerce City and North Denver (CCND) neighborhoods, within a three-mile radius of the refinery operations. The monitor locations are shown in Figures A-1 and A-2 and described in Table 1; they were selected based on the following criteria:

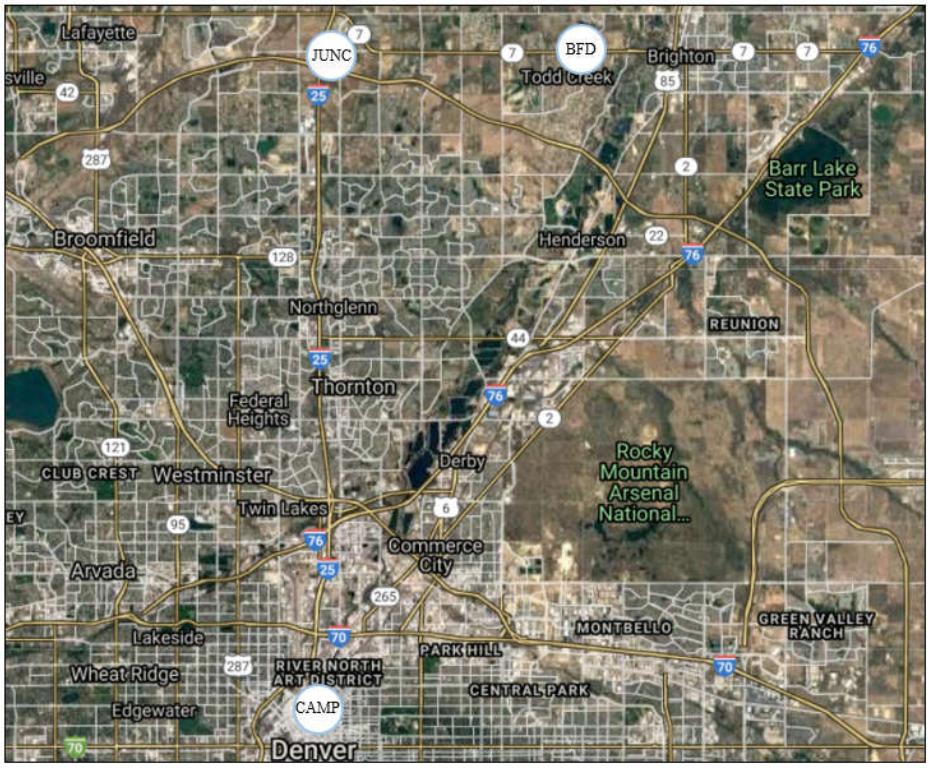
- Historical wind pattern data,
- Proximity to the refinery and non-refinery sources,
- Existing infrastructure, as well as site access and safety,
- Community feedback

FIGURE A-1
MAP OF TEN CCND MONITOR LOCATIONS



Additional planned air samples were collected at non-CCND community sampling sites (reference locations), in both urban and rural locations (Table A-2). These locations were at the E470-I25 Junction (JUNC), the Brighton Fire Department (BFD), and the Colorado Department of Health and Environment (CDPHE) CAMP air monitoring station (CAMP). The JUNC and BFD monitoring locations were chosen as rural background locations about 13 miles north of the CCND network. The CAMP location was selected as a representative urban location that has comparative data collected by CDPHE[15].

FIGURE A-2
MAP OF THREE NON-CCND COMMUNITY MONITORING (URBAN AND RURAL BACKGROUND) SITES: E470/I25 (JUNC), BRIGHTON FIRE DEPARTMENT (BFD) AND COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE) CAMP AIR MONITORING STATION (CAMP)



[15] CDPHE describes CAMP as Urban in many reports. As an example, this description can be found on page 6 of the 2020 Ambient Air Monitoring Network Assessment: https://www.colorado.gov/airquality/tech_doc_repository.aspx?action=open&file=2020_CO_5yr_Network_Assessment.pdf

TABLE A-1
CCND MONITORS AND SUMMA CANISTER SAMPLING LOCATIONS

Location ID	Secondary ID	GPS Coordinates	Distance from Refinery Center (miles)	Cross Streets
CM1	Rose Hill Elementary School	39.80164, -104.90882	2.0	E. 58th Ave. & Oneida St., Commerce City
CM2	Suncor Refinery Business Center	39.79619, -104.95732	0.70	Brighton Blvd. & York St., Commerce City
CM3	Adams City High School	39.82736, -104.90193	2.9	E. 72nd Ave. & Quebec Pkwy, Commerce City
CM4	Adams City Middle School	39.82893, -104.93499	1.9	Birch St. & E. 72nd Ave., Commerce City
CM5	Central Elementary School	39.81457, -104.91928	1.7	Holly St. & E 64th Ave., Commerce City
CM6	Focus Points Family Resource Center	39.78436, -104.95663	1.4	Columbine St. & 48th Ave., Denver
CM7	Kearney Middle School	39.80888, -104.91545	1.7	E. 62nd Ave. & Kearney St., Commerce City
CM8	Monroe	39.81560, -104.94503	0.85	Monroe St. & E. 64th Ave., Denver
CM9	48th and Race	39.78455, -104.96264	1.7	East 48th Ave. & Race St., Denver
CM10	Alsup Elementary School	39.82026, -104.93663	1.3	East 68th Ave. & Birch St., Commerce City

TABLE A-2
SUMMA CANISTER REFERENCE LOCATIONS

Location ID	Secondary ID	GPS Coordinates	Distance from Refinery Center (miles)	Cross Streets
CAMP	Denver CDPHE	39.75111, -104.98766	4.2	Champa St. & N. Broadway, Denver
JUNC	E470/I25	39.98614, -104.98468	12.8	E. 160th & Washington St., Thornton
BFD	Brighton	39.98512, -104.86665	13.1	Havana St. & Havana Way, Brighton

Entech Instruments Silonite™ CS1200E Passive Canister Samplers connected to six-liter chemically inert stainless steel ("Summa" canisters) were used to collect samples over a one-hour period. The Summa canisters were cleaned and blanked for use according to laboratory standard operating procedures. Planned air samples were collected by a field technician by manually opening and closing the Summa canister's regulator valve during a time when real-time instruments indicated total VOC concentrations to be less than the 1-ppm trigger level. VOC sensor-triggered samples were collected automatically by the CCND Lunar Outpost Canary-S VOC monitor paired with an ACE Summa canister triggering system. The VOC sensor-triggered samples are collected if the VOC monitor detected one (1) part per million (ppm) of total VOCs during a one-minute period. All sampling and quality assurance procedures were performed by Montrose. All Summa canister field sampling followed the Standard Operating Procedure (SOP) provided in the QAPP.

The canister samples were shipped to Enthalpy Analytical in Durham, North Carolina. The United States Environmental Protection Agency (USEPA) Compendium Method TO-14A "*Determination of Volatile Organic Compounds (VOCs) in Ambient Air using Specially Prepared Canisters with Subsequent Analysis by Gas Chromatography*" and TO-15 entitled "*Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)*" was followed for both sampling and analysis methodology. A total of 59 compounds were selected for analysis in this assessment and was based on the typical set of compounds monitored for in urban and industrial areas, and accounting for laboratory analysis capabilities (Table A-3).

TABLE A-3
SELECTED COMPOUNDS MEASURED IN SUMMA CANISTERS

Ethylene	Isopentane	3-Methylpentane	3-Methylheptane	2,4-Dimethylpentane
Acetylene	1-Pentene	1-Hexene	Nonane	2,3-Dimethylpentane
Ethane	Pentane	1,3-Butadiene	3-Ethyltoluene	1,2,3-Trimethylbenzene
Propylene	Isoprene	Heptane	2-Ethyltoluene	1,3,5-Trimethylbenzene
Propane	Trans-2-Pentene	2-Methylhexane	Decane	2,2,4-Trimethylpentane
Isobutane	Cis-2-Pentene	Toluene	Ethylbenzene	Tetrachloroethene
1-Butene	2,2-Dimethylbutane	3-Methylhexane	m-Diethylbenzene	1,2,4-Trimethylbenzene
Butane	Cyclopentane	Methylcyclohexane	p-Diethylbenzene	Methylcyclopentane
Trans-2-Butene	Cyclohexane	Hexane	Undecane	2,3,4-Trimethylpentane
Cis-2-Butene	2-Methylpentane	2-Methylheptane	Dodecane	2,3-Dimethylbutane
m-/p-Xylenes	o-Xylene	4-Ethyltoluene	Benzene	Carbon disulfide
n-Octane	Isopropylbenzene	n-Propylbenzene	Naphthalene	

Mobile Van Sampling Methods

The mobile monitoring van is a Mercedes 2500 Sprinter Van outfitted with equipment necessary to identify and quantitate individual chemicals present in ambient air to ultra-low concentrations. The mobile monitoring van is equipped with an Ionicon Model 6000-X2 proton transfer reaction time-of-flight mass spectrometer (PTR-TOF-MS). This instrument provides concentrations of select chemicals at sub-parts per billion (ppb) levels and as quickly as one measurement per second. The mobile monitoring van is outfitted with an external sampling system, which transports ambient air from outside of the van into the PTR-TOF-MS sample inlet for immediate real-time analysis. The entire sampling system is comprised of Teflon or Teflon-coated materials, which ensures the lowest amount of sample loss due to surface absorption of chemical molecules. The mobile monitoring van incorporates a high-precision global positioning system (GPS), a sonic anemometer to measure wind direction and wind velocity and a multitude of other incorporated meteorological (MET) sensors.

During the mobile monitoring program, groups of chemical isomers (Table A-5) that include the list of 65 chemicals in Table A-4 were measured to determine the instantaneous ambient concentrations. This list of chemicals was compiled based on the typical chemicals that are monitored in urban and industrial areas, and the mobile monitoring van analysis capabilities.

The mobile monitoring van followed a driving route through each of the six CCND residential neighborhoods that fall within a three-mile radius around the refinery operations. Accessible streets in the neighborhoods were traversed at approximately 10 MPH while collecting a data point every one second.

TABLE A-4
MOBILE MONITORING VAN PROGRAM CHEMICALS

Propane	2-Methylhexane	Ethane	Methyl-cyclopentane	o-Ethyltoluene (2-ethyltoluene)
1,3-Butadiene	2-Methylpentane	Ethylbenzene	m-Ethyltoluene	p-Diethylbenzene (1,4-diethylbenzene)
1-Butene	3-Methylheptane	Ethylcyclohexane	m/o/p-Xylenes	p-Ethyltoluene (4-ethyltoluene)
1-Hexene	3-Methylhexane	Ethylene	n-Butane	1,2,4-trimethylbenzene
1-Pentene	3-Methylpentane	Hydrogen Cyanide	n-Decane	Propylene (Propene)
Styrene	Acetylene	Hydrogen Sulfide	n-Dodecane	2,2,4-Trimethylpentane
2,2-Dimethylbutane	Benzene	i-Butane	n-Heptane	Tetrachloroethylene
Toluene	Carbon disulfide	i-Pentane	n-Hexane	2,3,4-Trimethylpentane
2,3-Dimethylbutane	trans-2-Butene	Isopentane	n-Nonane	trans-1,2-Dimethylcyclohexane
2,3-Dimethylpentane	cis-2-Butene	Isoprene	n-Octane	trans-1,3-Dimethylcyclohexane
2,4-Dimethylpentane	cis-2-Pentene	m-Diethylbenzene	n-Pentane	cis-1,3-dimethylcyclohexane
2-Methyl-2-butene	Cumene	Methanol	n-Propylbenzene	trans-2-Pentene
2-Methylheptane	Cyclohexane	Methyl-cyclohexane	n-Undecane	Cyclopentane

In a real-time PTR-TOF analysis, it is not possible to speciate isomers, or chemical compounds that have the same molecular weight. For example, n-hexane, 2-methyl pentane, and 2,2-dimethyl butane all have a molecular mass of 86.178 g/mol. To provide the most conservative determination of concentration during this mapping program, each isomer's concentration is reported as the sum of all isomers with the same molecular weight. For the sake of simplicity, the calculations in the report refer to generic names for a group of specific isomers. The following table defines which isomers comprise each generic group. For risk assessment calculations, risks from the isomer groups are calculated based on health RL for the isomer representing the isomer group, which may conservatively overestimate risk from exposure to the isomer group.

Table A-5
MOBILE MONITORING VAN PROGRAM CHEMICAL GROUP

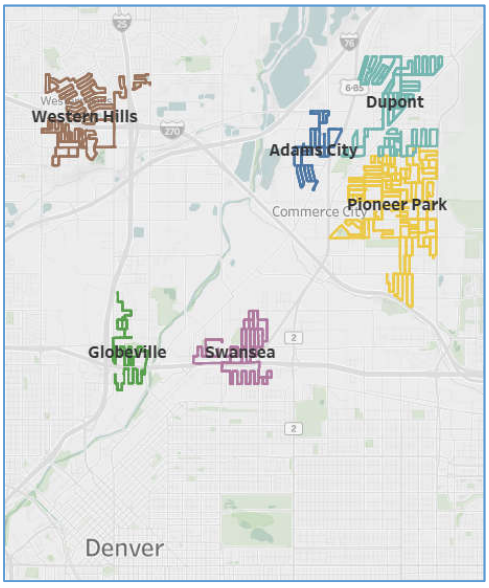
Group Name	Specific Isomers
Butenes	1-Butene
	cis-2-Butene
	trans-2-Butene
Butanes	iso-Butane
	n-Butane
Pentenes	1-Pentene
	2-Methyl-2-butene
	cis-2-Pentene
	trans-2-Pentene
Pentanes	iso-Pentane
	n-Pentane
	neo-Pentane
Hexenes	1-Hexene
	Cyclohexane
	Methylcyclopentane
Hexanes	n-Hexane
	2-Methylpentane
	3-Methylpentane
	2,2-Dimethylbutane
	2,3-Dimethylbutane
Heptanes	n-Heptane
	2-Methylhexane
	3-Methylhexane
	2,3-Dimethylpentane
	2,4-Dimethylpentane
Xylenes	Ethyl Benzene
	o-Xylene
	m-Xylene
	p-Xylene
Dimethylcyclohexanes	Ethylcyclohexane
	cis-1,3-Dimethylcyclohexane
	trans-1,2-Dimethylcyclohexane
	trans-1,3-Dimethylcyclohexane
Octanes	n-Octane
	2-Methylheptane
	3-Methylheptane
	2,2,4-Trimethylpentane
	2,3,4-Trimethylpentane
Trimethylbenzenes	Cumene
	1,2,4-Trimethylbenzene
	o-Ethyltoluene
	m-Ethyltoluene
	p-Ethyltoluene
	n-Propylbenzene
Diethylbenzenes	o-Diethylbenzene
	m-Diethylbenzene
	p-Diethylbenzene

The PTR-TOF-MS calibration was checked and the instrument was zeroed each day prior to collection of any ambient air data. The instrument was calibrated using United States Environmental Protection Agency (USEPA) protocol certified calibration gases. The multi-chemical cylinder standards were used to generate multiple point calibration curves for each commercially available chemical present in the standard. Note: Not all chemicals listed in Table 2-1 are available as certified calibration gases. The chemical dilutions were made using an Environics Model 4040 gas dilution system. The gas dilution system was validated using the appropriate USEPA methodology (40 Code of Federal Regulation Part 51 Appendix M, Method 205). Zero-count measurements were obtained to ensure proper baseline measurements were incorporated into the calculation of each chemical's concentration. Zero-count measurements were performed through the entire sampling system using ultra-high purity air. Post-testing calibration checks were performed on the instrument to ensure there was no significant drift during the course of the sampling event. Drift can cause an increase or decrease in the measured chemical concentrations, which can lead to both positive and negative biasing of the obtained results.

The mobile monitoring van collected continuous measurements throughout each neighborhood following the routes shown in Figure A-3. Measurements that were collected from transition periods or from moving between neighborhoods were excluded in this assessment.

The measurements were collected from the ambient environment at a height of 15 feet above grade at approximately 8 liters per minute using a Teflon-coated sampling boom and pump. The PTR-TOF-MS sampled a slip stream of this flow at approximately 100 ml/min. The sample was introduced into the reaction tube of the PTR-TOF-MS, and results were collected in 1-second intervals. Specific PTR-TOF-MS instrument operation conditions are available on the CCND website.

FIGURE A-3
MOBILE MONITORING VAN PROGRAM ROUTE THROUGH SIX NEIGHBORHOOD AREAS



Appendix B

Chronic Hazard Quotients for Individual Chemicals from Summa Canister by Location

Summa Canister Data Summary and Risk Assessment
CM1 - Rose | Q3 2021 - Q1 2023

Compound Name	Cas No.	# Samples	# Detections	Maximum Detections	Time-weighted Average (ppb)	Health Reference Level (ppb)	Screening Value Source	Hazard Quotients
1-Butene	106-98-9	15	8	5.7595	0.4973	2300	TCEQ Long-Term AMCV	0.0002
1-Hexene	592-41-6	15	1	0.1320	0.027	50	TCEQ Long-Term AMCV	0.0005
1-Pentene	109-67-1	15	6	0.3090	0.0285	560	TCEQ Long-Term AMCV	0.0001
1,2,3-Trimethylbenzene	526-73-8	15	7	1.0100	0.0771	12	EPA Inhalation RfCi	0.0063
1,2,4-Trimethylbenzene	95-63-6	15	8	2.9000	0.074	12	EPA Inhalation RfCi	0.0061
1,3-Butadiene	106-99-0	15	8	0.2240	0.0642	0.95	EPA RSL Non-Cancer	0.0676
1,3-Diethylbenzene	141-93-5	15	1	0.0830	0.048	45	TCEQ Long-Term AMCV	0.0011
1,3,5-Trimethylbenzene	108-67-8	15	4	0.8910	0.0438	12	EPA Inhalation RfCi	0.0036
1,4-Diethylbenzene	105-05-5	15	4	0.9040	0.0293	45	TCEQ Long-Term AMCV	0.0007
2-Ethyltoluene	611-14-3	15	2	0.3690	0.0278	25	TCEQ Long-Term AMCV	0.0011
2-Methylheptane	592-27-8	15	5	0.4670	0.0421	380	TCEQ Long-Term AMCV	0.0001
2-Methylhexane	591-76-4	15	8	0.9450	0.0659	2200	TCEQ Long-Term AMCV	0.0000
2-Methylpentane	107-83-5	15	13	2.6100	0.2188	190	TCEQ Long-Term AMCV	0.0012
2,2-Dimethylbutane	75-83-2	15	3	0.6200	0.2207	190	TCEQ Long-Term AMCV	0.0012
2,2,4-Trimethylpentane	540-84-1	15	8	0.4790	0.1033	380	TCEQ Long-Term AMCV	0.0003
2,3-Dimethylbutane	79-29-8	15	8	0.6870	0.1102	190	TCEQ Long-Term AMCV	0.0006
2,3-Dimethylpentane	565-59-3	15	9	0.4760	0.0616	2200	TCEQ Long-Term AMCV	0.0000
2,3,4-Trimethylpentane	565-75-3	15	3	0.1940	0.0276	380	TCEQ Long-Term AMCV	0.0001
2,4-Dimethylpentane	108-08-7	15	10	0.4380	0.1137	2200	TCEQ Long-Term AMCV	0.0001
3-Ethyltoluene	620-14-4	15	6	0.8950	0.0517	25	TCEQ Long-Term AMCV	0.0021
3-Methylheptane	589-81-1	15	5	0.4130	0.0511	380	TCEQ Long-Term AMCV	0.0001
3-Methylhexane	589-34-4	15	9	1.0200	0.1222	2200	TCEQ Long-Term AMCV	0.0001
3-Methylpentane	96-14-0	15	11	2.0400	0.2063	190	TCEQ Long-Term AMCV	0.0011
4-Ethyltoluene	622-96-8	15	4	0.3300	0.0449	25	TCEQ Long-Term AMCV	0.0018
Acetylene	74-86-2	15	14	3.5200	0.6717	2500	TCEQ Long-Term AMCV	0.0003
Benzene	71-43-2	15	14	0.9960	0.2581	3	ATSDR Chronic MRL	0.0860
Butane	106-97-8	15	14	27.6000	1.9448	10000	TCEQ Long-Term AMCV	0.0002
Carbon disulfide	75-15-0	15	7	0.3030	0.1605	225	EPA Inhalation RfCi	0.0007
Cis-2-Butene	590-18-1	15	5	0.2090	0.028	700	TCEQ Long-Term AMCV	0.0000
Cis-2-Pentene	627-20-3	15	3	0.3090	0.0274	560	TCEQ Long-Term AMCV	0.0000
Cyclohexane	110-82-7	15	14	1.0000	0.1753	1,743	EPA Inhalation RfCi	0.0001
Cyclopentane	287-92-3	15	10	0.5072	0.0742	590	TCEQ Long-Term AMCV	0.0001
Decane	124-18-5	15	8	0.5830	0.0852	190	TCEQ Long-Term AMCV	0.0004
Dodecane	112-40-3	15	7	108.0000	0.293	3.8	CDPHE Chronic	0.0771
Ethane	74-84-0	15	14	21.8000	7.8912	NA	NA	
Ethylbenzene	100-41-4	15	11	1.5600	0.0967	230	EPA Inhalation RfCi	0.0004
Ethylene	74-85-1	15	14	4.4100	1.0927	5300	TCEQ Long-Term AMCV	0.0002
Heptane	142-82-5	15	13	0.8180	0.1943	98	EPA Inhalation RfCi	0.0020
Hexane	110-54-3	15	14	1.6000	0.5173	199	EPA Inhalation RfCi	0.0026
Isobutane	75-28-5	15	14	6.0100	1.1004	10000	TCEQ Long-Term AMCV	0.0001
Isopentane	78-78-4	15	13	7.4500	1.4837	8100	TCEQ Long-Term AMCV	0.0002
Isoprene	78-79-5	15	5	7.8359	0.0623	140	TCEQ Long-Term AMCV	0.0004
Isopropylbenzene	98-82-8	15	4	0.1970	0.0363	81	EPA Inhalation RfCi	0.0004
m,p-Xylenes	108-38-3..	15	14	6.6000	0.2279	23	EPA RSL Non-Cancer	0.0099
Methylcyclohexane	108-87-2	15	7	0.7860	0.125	400	TCEQ Long-Term AMCV	0.0003
Methylcyclopentane	96-37-7	15	8	1.6300	0.1754	75	TCEQ Long-Term AMCV	0.0023
n-Octane	111-65-9	15	9	0.7280	0.0699	380	TCEQ Long-Term AMCV	0.0002
Naphthalene	91-20-3	15	1	2.4000	0.0331	0.57	EPA Inhalation RfCi	0.0578
Nonane	111-84-2	15	4	2.0200	0.0317	3.8	EPA Inhalation RfCi	0.0083
o-Xylene	95-47-6	15	11	2.1400	0.1034	23	EPA RSL Non-Cancer	0.0045
Pentane	109-66-0	15	13	6.7868	1.4092	338	EPA Inhalation RfCi	0.0042
Propane	74-98-6	15	14	51.9000	3.6964	NA	NA	
Propylbenzene	103-65-1	15	4	0.2990	0.046	203	EPA Inhalation RfCi	0.0002
Propylene	115-07-1	15	14	1.0500	0.2422	1,801	EPA RSL Non-Cancer	0.0001
Tetrachloroethene	127-18-4	15	4	0.1230	0.0503	5.9	EPA Inhalation RfCi	0.0085
Toluene	108-88-3	15	14	5.1200	0.9128	1,327	EPA Inhalation RfCi	0.0007
Trans-2-Butene	624-64-6	15	3	0.3460	0.028	700	TCEQ Long-Term AMCV	0.0000
Trans-2-Pentene	646-04-8	15	6	0.6580	0.0892	560	TCEQ Long-Term AMCV	0.0002
Undecane	1120-21-4	15	8	6.5900	0.0855	55	TCEQ Long-Term AMCV	0.0016
							Hazard Index	0.3662

All results presented in parts per billion by volume (ppbv).
NA= Health reference level not available.
Results averaged using EPA time-weighted average (TWA) equation (see methods).
Laboratory non-detections are reported as less than ("<") the method detection limit (MDL) as maximum detection and 1/2 MDL in the time-weighted average calculation.

Summa Canister Data Summary and Risk Assessment
CM2 - Suncor RBC | Q3 2021 - Q1 2023

Compound Name	Cas No.	# Samples	# Detections	Maximum Detections	Time-weighted Average (ppb)	Health Reference Level (ppb)	Screening Value Source	Hazard Quotients
1-Butene	106-98-9	12	7	0.2580	0.0633	2300	TCEQ Long-Term AMCV	0.0000
1-Hexene	592-41-6	12	1	0.5274	0.0275	50	TCEQ Long-Term AMCV	0.0006
1-Pentene	109-67-1	12	5	0.7727	0.0422	560	TCEQ Long-Term AMCV	0.0001
1,2,3-Trimethylbenzene	526-73-8	12	5	0.1011	0.0576	12	EPA Inhalation RfCi	0.0047
1,2,4-Trimethylbenzene	95-63-6	12	7	0.2270	0.0672	12	EPA Inhalation RfCi	0.0055
1,3-Butadiene	106-99-0	12	5	0.1670	0.0708	0.95	EPA RSL Non-Cancer	0.0746
1,3-Diethylbenzene	141-93-5	12	0	< 0.0637	0.0261	45	TCEQ Long-Term AMCV	0.0006
1,3,5-Trimethylbenzene	108-67-8	12	3	0.0956	0.041	12	EPA Inhalation RfCi	0.0034
1,4-Diethylbenzene	105-05-5	12	5	0.0991	0.0537	45	TCEQ Long-Term AMCV	0.0012
2-Ethyltoluene	611-14-3	12	1	0.0724	0.0265	25	TCEQ Long-Term AMCV	0.0011
2-Methylheptane	592-27-8	12	3	0.0743	0.027	380	TCEQ Long-Term AMCV	0.0001
2-Methylhexane	591-76-4	12	6	0.2090	0.062	2200	TCEQ Long-Term AMCV	0.0000
2-Methylpentane	107-83-5	12	10	12.2428	0.2509	190	TCEQ Long-Term AMCV	0.0013
2,2-Dimethylbutane	75-83-2	12	5	2.2430	0.1432	190	TCEQ Long-Term AMCV	0.0008
2,2,4-Trimethylpentane	540-84-1	12	7	9.3200	0.0972	380	TCEQ Long-Term AMCV	0.0003
2,3-Dimethylbutane	79-29-8	12	5	5.8296	0.1119	190	TCEQ Long-Term AMCV	0.0006
2,3-Dimethylpentane	565-59-3	12	6	2.1288	0.0667	2200	TCEQ Long-Term AMCV	0.0000
2,3,4-Trimethylpentane	565-75-3	12	3	0.2590	0.1156	380	TCEQ Long-Term AMCV	0.0003
2,4-Dimethylpentane	108-08-7	12	5	0.3170	0.1064	2200	TCEQ Long-Term AMCV	0.0000
3-Ethyltoluene	620-14-4	12	4	0.2524	0.0386	25	TCEQ Long-Term AMCV	0.0015
3-Methylheptane	589-81-1	12	5	0.2395	0.0693	380	TCEQ Long-Term AMCV	0.0002
3-Methylhexane	589-34-4	12	8	0.3249	0.145	2200	TCEQ Long-Term AMCV	0.0001
3-Methylpentane	96-14-0	12	10	7.2120	0.2384	190	TCEQ Long-Term AMCV	0.0013
4-Ethyltoluene	622-96-8	12	3	0.0922	0.0453	25	TCEQ Long-Term AMCV	0.0018
Acetylene	74-86-2	12	11	2.2800	0.5254	2500	TCEQ Long-Term AMCV	0.0002
Benzene	71-43-2	12	11	2.2000	0.2558	3	ATSDR Chronic MRL	0.0853
Butane	106-97-8	12	11	26.7503	2.8855	10000	TCEQ Long-Term AMCV	0.0003
Carbon disulfide	75-15-0	12	5	0.2850	0.114	225	EPA Inhalation RfCi	0.0005
Cis-2-Butene	590-18-1	12	4	0.8368	0.0413	700	TCEQ Long-Term AMCV	0.0001
Cis-2-Pentene	627-20-3	12	3	1.4242	0.0291	560	TCEQ Long-Term AMCV	0.0001
Cyclohexane	110-82-7	12	10	11.1000	0.1881	1,743	EPA Inhalation RfCi	0.0001
Cyclopentane	287-92-3	12	9	2.2843	0.122	590	TCEQ Long-Term AMCV	0.0002
Decane	124-18-5	12	7	0.1101	0.0853	190	TCEQ Long-Term AMCV	0.0004
Dodecane	112-40-3	12	4	0.1978	0.1414	3.8	CDPHE Chronic	0.0372
Ethane	74-84-0	12	11	18.5845	8.3764	NA	NA	
Ethylbenzene	100-41-4	12	7	0.5280	0.0804	230	EPA Inhalation RfCi	0.0003
Ethylene	74-85-1	12	11	3.0500	0.965	5300	TCEQ Long-Term AMCV	0.0002
Heptane	142-82-5	12	11	2.2600	0.22	98	EPA Inhalation RfCi	0.0023
Hexane	110-54-3	12	11	9.0500	0.4821	199	EPA Inhalation RfCi	0.0024
Isobutane	75-28-5	12	11	4.7847	1.0107	10000	TCEQ Long-Term AMCV	0.0001
Isopentane	78-78-4	12	11	97.2967	1.7468	8100	TCEQ Long-Term AMCV	0.0002
Isoprene	78-79-5	12	3	0.2506	0.0275	140	TCEQ Long-Term AMCV	0.0002
Isopropylbenzene	98-82-8	12	2	0.0839	0.0424	81	EPA Inhalation RfCi	0.0005
m,p-Xylenes	108-38-3..	12	10	1.8500	0.1967	23	EPA RSL Non-Cancer	0.0086
Methylcyclohexane	108-87-2	12	5	0.1760	0.1052	400	TCEQ Long-Term AMCV	0.0003
Methylcyclopentane	96-37-7	12	8	0.3950	0.1448	75	TCEQ Long-Term AMCV	0.0019
n-Octane	111-65-9	12	8	0.3820	0.1061	380	TCEQ Long-Term AMCV	0.0003
Naphthalene	91-20-3	12	3	0.0727	0.0411	0.57	EPA Inhalation RfCi	0.0718
Nonane	111-84-2	12	7	0.1294	0.0657	3.8	EPA Inhalation RfCi	0.0172
o-Xylene	95-47-6	12	7	0.5830	0.0851	23	EPA RSL Non-Cancer	0.0037
Pentane	109-66-0	12	11	32.2527	1.3195	338	EPA Inhalation RfCi	0.0039
Propane	74-98-6	12	11	14.6000	4.6106	NA	NA	
Propylbenzene	103-65-1	12	2	0.0997	0.041	203	EPA Inhalation RfCi	0.0002
Propylene	115-07-1	12	11	0.5780	0.2463	1,801	EPA RSL Non-Cancer	0.0001
Tetrachloroethene	127-18-4	12	3	0.1220	0.0536	5.9	EPA Inhalation RfCi	0.0091
Toluene	108-88-3	12	11	5.6300	0.4976	1,327	EPA Inhalation RfCi	0.0004
Trans-2-Butene	624-64-6	12	5	1.1033	0.0401	700	TCEQ Long-Term AMCV	0.0001
Trans-2-Pentene	646-04-8	12	5	3.6620	0.0425	560	TCEQ Long-Term AMCV	0.0001
Undecane	1120-21-4	12	6	0.1204	0.0928	55	TCEQ Long-Term AMCV	0.0017
							Hazard Index	0.3498

All results presented in parts per billion by volume (ppbv).
NA= Health reference level not available.
Results averaged using EPA time-weighted average (TWA) equation (see methods).
Laboratory non-detections are reported as less than ("<") the method detection limit (MDL) as maximum detection and 1/2 MDL in the time-weighted average calculation.

Summa Canister Data Summary and Risk Assessment
CM3 - Adams High School | Q3 2021 - Q1 2023

Compound Name	Cas No.	# Samples	# Detections	Maximum Detections	Time-weighted Average (ppb)	Health Reference Level (ppb)	Screening Value Source	Hazard Quotients
1-Butene	106-98-9	16	13	0.8931	0.0624	2300	TCEQ Long-Term AMCV	0.0000
1-Hexene	592-41-6	16	2	0.3664	0.0303	50	TCEQ Long-Term AMCV	0.0006
1-Pentene	109-67-1	16	3	4.4763	0.039	560	TCEQ Long-Term AMCV	0.0001
1,2,3-Trimethylbenzene	526-73-8	16	5	0.1334	0.0297	12	EPA Inhalation RfCi	0.0024
1,2,4-Trimethylbenzene	95-63-6	16	9	0.2180	0.0409	12	EPA Inhalation RfCi	0.0034
1,3-Butadiene	106-99-0	16	7	0.2090	0.0295	0.95	EPA RSL Non-Cancer	0.0311
1,3-Diethylbenzene	141-93-5	16	1	0.0692	0.0412	45	TCEQ Long-Term AMCV	0.0009
1,3,5-Trimethylbenzene	108-67-8	16	3	0.1410	0.0283	12	EPA Inhalation RfCi	0.0023
1,4-Diethylbenzene	105-05-5	16	6	0.1940	0.0425	45	TCEQ Long-Term AMCV	0.0009
2-Ethyltoluene	611-14-3	16	1	0.0813	0.0295	25	TCEQ Long-Term AMCV	0.0012
2-Methylheptane	592-27-8	16	3	0.4086	0.0306	380	TCEQ Long-Term AMCV	0.0001
2-Methylhexane	591-76-4	16	4	2.2326	0.0348	2200	TCEQ Long-Term AMCV	0.0000
2-Methylpentane	107-83-5	16	14	0.6720	0.2015	190	TCEQ Long-Term AMCV	0.0011
2,2-Dimethylbutane	75-83-2	16	5	2.2300	0.0344	190	TCEQ Long-Term AMCV	0.0002
2,2,4-Trimethylpentane	540-84-1	16	7	1.3900	0.0461	380	TCEQ Long-Term AMCV	0.0001
2,3-Dimethylbutane	79-29-8	16	7	18.1862	0.0758	190	TCEQ Long-Term AMCV	0.0004
2,3-Dimethylpentane	565-59-3	16	5	1.3917	0.0331	2200	TCEQ Long-Term AMCV	0.0000
2,3,4-Trimethylpentane	565-75-3	16	2	0.3816	0.0305	380	TCEQ Long-Term AMCV	0.0001
2,4-Dimethylpentane	108-08-7	16	7	1.3669	0.0634	2200	TCEQ Long-Term AMCV	0.0000
3-Ethyltoluene	620-14-4	16	8	0.4212	0.0423	25	TCEQ Long-Term AMCV	0.0017
3-Methylheptane	589-81-1	16	3	0.3427	0.0769	380	TCEQ Long-Term AMCV	0.0002
3-Methylhexane	589-34-4	16	9	2.1226	0.1388	2200	TCEQ Long-Term AMCV	0.0001
3-Methylpentane	96-14-0	16	12	10.2662	0.2433	190	TCEQ Long-Term AMCV	0.0013
4-Ethyltoluene	622-96-8	16	3	0.1540	0.0319	25	TCEQ Long-Term AMCV	0.0013
Acetylene	74-86-2	16	15	1.6800	0.6094	2500	TCEQ Long-Term AMCV	0.0002
Benzene	71-43-2	16	15	3.8700	0.1968	3	ATSDR Chronic MRL	0.0656
Butane	106-97-8	16	15	73.4023	1.8224	10000	TCEQ Long-Term AMCV	0.0002
Carbon disulfide	75-15-0	16	6	1.1100	0.0453	225	EPA Inhalation RfCi	0.0002
Cis-2-Butene	590-18-1	16	4	6.1105	0.042	700	TCEQ Long-Term AMCV	0.0001
Cis-2-Pentene	627-20-3	16	1	4.7134	0.0383	560	TCEQ Long-Term AMCV	0.0001
Cyclohexane	110-82-7	16	12	2.4500	0.1052	1,743	EPA Inhalation RfCi	0.0001
Cyclopentane	287-92-3	16	6	6.0125	0.0634	590	TCEQ Long-Term AMCV	0.0001
Decane	124-18-5	16	8	0.2920	0.0312	190	TCEQ Long-Term AMCV	0.0002
Dodecane	112-40-3	16	7	1.1500	0.0437	3.8	CDPHE Chronic	0.0115
Ethane	74-84-0	16	15	12.8000	7.6098	NA	NA	
Ethylbenzene	100-41-4	16	11	0.3520	0.0586	230	EPA Inhalation RfCi	0.0003
Ethylene	74-85-1	16	15	2.6500	0.9176	5300	TCEQ Long-Term AMCV	0.0002
Heptane	142-82-5	16	15	1.3600	0.1165	98	EPA Inhalation RfCi	0.0012
Hexane	110-54-3	16	15	7.9700	0.2947	199	EPA Inhalation RfCi	0.0015
Isobutane	75-28-5	16	15	10.0503	0.6457	10000	TCEQ Long-Term AMCV	0.0001
Isopentane	78-78-4	16	14	136.5058	0.7783	8100	TCEQ Long-Term AMCV	0.0001
Isoprene	78-79-5	16	3	0.3304	0.0308	140	TCEQ Long-Term AMCV	0.0002
Isopropylbenzene	98-82-8	16	1	0.1400	0.0278	81	EPA Inhalation RfCi	0.0003
m,p-Xylenes	108-38-3..	16	12	1.1700	0.1562	23	EPA RSL Non-Cancer	0.0068
Methylcyclohexane	108-87-2	16	7	1.4736	0.0556	400	TCEQ Long-Term AMCV	0.0001
Methylcyclopentane	96-37-7	16	12	6.9197	0.177	75	TCEQ Long-Term AMCV	0.0024
n-Octane	111-65-9	16	7	0.2920	0.0309	380	TCEQ Long-Term AMCV	0.0001
Naphthalene	91-20-3	16	3	0.1060	0.0323	0.57	EPA Inhalation RfCi	0.0564
Nonane	111-84-2	16	7	0.2242	0.0308	3.8	EPA Inhalation RfCi	0.0081
o-Xylene	95-47-6	16	11	0.3380	0.0574	23	EPA RSL Non-Cancer	0.0025
Pentane	109-66-0	16	15	45.9298	0.8415	338	EPA Inhalation RfCi	0.0025
Propane	74-98-6	16	15	7.7972	3.6087	NA	NA	
Propylbenzene	103-65-1	16	3	0.1590	0.0282	203	EPA Inhalation RfCi	0.0001
Propylene	115-07-1	16	15	0.6870	0.202	1,801	EPA RSL Non-Cancer	0.0001
Tetrachloroethene	127-18-4	16	3	0.3950	0.0298	5.9	EPA Inhalation RfCi	0.0051
Toluene	108-88-3	16	15	4.9500	0.3703	1,327	EPA Inhalation RfCi	0.0003
Trans-2-Butene	624-64-6	16	3	3.9651	0.0377	700	TCEQ Long-Term AMCV	0.0001
Trans-2-Pentene	646-04-8	16	3	9.4614	0.1245	560	TCEQ Long-Term AMCV	0.0002
Undecane	1120-21-4	16	9	0.1540	0.0413	55	TCEQ Long-Term AMCV	0.0008
							Hazard Index	0.2169

All results presented in parts per billion by volume (ppbv).
NA= Health reference level not available.
Results averaged using EPA time-weighted average (TWA) equation (see methods).
Laboratory non-detections are reported as less than ("<") the method detection limit (MDL) as maximum detection and 1/2 MDL in the time-weighted average calculation.

Summa Canister Data Summary and Risk Assessment
CM4 - Adams Middle School | Q3 2021 - Q1 2023

Compound Name	Cas No.	# Samples	# Detections	Maximum Detections	Time-weighted Average (ppb)	Health Reference Level (ppb)	Screening Value Source	Hazard Quotients
1-Butene	106-98-9	13	7	0.7560	0.1391	2300	TCEQ Long-Term AMCV	0.0001
1-Hexene	592-41-6	13	0	< 0.1275	0.0376	50	TCEQ Long-Term AMCV	0.0008
1-Pentene	109-67-1	13	3	0.2660	0.0389	560	TCEQ Long-Term AMCV	0.0001
1,2,3-Trimethylbenzene	526-73-8	13	7	0.2136	0.0998	12	EPA Inhalation RfCi	0.0082
1,2,4-Trimethylbenzene	95-63-6	13	10	0.2800	0.0966	12	EPA Inhalation RfCi	0.0079
1,3-Butadiene	106-99-0	13	6	0.3000	0.1148	0.95	EPA RSL Non-Cancer	0.1209
1,3-Diethylbenzene	141-93-5	13	1	0.1275	0.0452	45	TCEQ Long-Term AMCV	0.0010
1,3,5-Trimethylbenzene	108-67-8	13	4	0.1450	0.0633	12	EPA Inhalation RfCi	0.0052
1,4-Diethylbenzene	105-05-5	13	4	0.1275	0.0379	45	TCEQ Long-Term AMCV	0.0008
2-Ethyltoluene	611-14-3	13	1	0.1275	0.0376	25	TCEQ Long-Term AMCV	0.0015
2-Methylheptane	592-27-8	13	3	0.1770	0.0491	380	TCEQ Long-Term AMCV	0.0001
2-Methylhexane	591-76-4	13	3	0.5640	0.1021	2200	TCEQ Long-Term AMCV	0.0000
2-Methylpentane	107-83-5	13	8	2.8900	0.2178	190	TCEQ Long-Term AMCV	0.0011
2,2-Dimethylbutane	75-83-2	13	4	0.2530	0.0922	190	TCEQ Long-Term AMCV	0.0005
2,2,4-Trimethylpentane	540-84-1	13	8	0.2260	0.083	380	TCEQ Long-Term AMCV	0.0002
2,3-Dimethylbutane	79-29-8	13	6	0.5710	0.1088	190	TCEQ Long-Term AMCV	0.0006
2,3-Dimethylpentane	565-59-3	13	10	0.4100	0.1669	2200	TCEQ Long-Term AMCV	0.0001
2,3,4-Trimethylpentane	565-75-3	13	2	0.1764	0.0746	380	TCEQ Long-Term AMCV	0.0002
2,4-Dimethylpentane	108-08-7	13	6	0.3920	0.1529	2200	TCEQ Long-Term AMCV	0.0001
3-Ethyltoluene	620-14-4	13	6	0.1900	0.0579	25	TCEQ Long-Term AMCV	0.0023
3-Methylheptane	589-81-1	13	4	0.1450	0.0783	380	TCEQ Long-Term AMCV	0.0002
3-Methylhexane	589-34-4	13	6	0.6110	0.1842	2200	TCEQ Long-Term AMCV	0.0001
3-Methylpentane	96-14-0	13	7	1.8100	0.1893	190	TCEQ Long-Term AMCV	0.0010
4-Ethyltoluene	622-96-8	13	2	0.1340	0.0394	25	TCEQ Long-Term AMCV	0.0016
Acetylene	74-86-2	13	12	4.6400	0.5953	2500	TCEQ Long-Term AMCV	0.0002
Benzene	71-43-2	13	11	0.8520	0.3306	3	ATSDR Chronic MRL	0.1102
Butane	106-97-8	13	12	13.8000	2.2847	10000	TCEQ Long-Term AMCV	0.0002
Carbon disulfide	75-15-0	13	5	0.6210	0.31	225	EPA Inhalation RfCi	0.0014
Cis-2-Butene	590-18-1	13	4	0.8080	0.0406	700	TCEQ Long-Term AMCV	0.0001
Cis-2-Pentene	627-20-3	13	2	0.1610	0.0379	560	TCEQ Long-Term AMCV	0.0001
Cyclohexane	110-82-7	13	12	1.0400	0.2144	1,743	EPA Inhalation RfCi	0.0001
Cyclopentane	287-92-3	13	5	0.8290	0.3337	590	TCEQ Long-Term AMCV	0.0006
Decane	124-18-5	13	8	0.3184	0.1484	190	TCEQ Long-Term AMCV	0.0008
Dodecane	112-40-3	13	6	0.5984	0.2259	3.8	CDPHE Chronic	0.0594
Ethane	74-84-0	13	12	52.2000	8.293	NA	NA	
Ethylbenzene	100-41-4	13	9	0.2650	0.111	230	EPA Inhalation RfCi	0.0005
Ethylene	74-85-1	13	12	6.5700	1.2362	5300	TCEQ Long-Term AMCV	0.0002
Heptane	142-82-5	13	11	0.7200	0.2242	98	EPA Inhalation RfCi	0.0023
Hexane	110-54-3	13	12	3.0500	0.6185	199	EPA Inhalation RfCi	0.0031
Isobutane	75-28-5	13	12	6.8000	1.0792	10000	TCEQ Long-Term AMCV	0.0001
Isopentane	78-78-4	13	11	13.5000	2.1981	8100	TCEQ Long-Term AMCV	0.0003
Isoprene	78-79-5	13	2	0.1275	0.038	140	TCEQ Long-Term AMCV	0.0003
Isopropylbenzene	98-82-8	13	2	0.1360	0.0601	81	EPA Inhalation RfCi	0.0007
m,p-Xylenes	108-38-3..	13	11	0.7810	0.2665	23	EPA RSL Non-Cancer	0.0116
Methylcyclohexane	108-87-2	13	5	0.5560	0.1077	400	TCEQ Long-Term AMCV	0.0003
Methylcyclopentane	96-37-7	13	6	1.3300	0.193	75	TCEQ Long-Term AMCV	0.0026
n-Octane	111-65-9	13	8	0.2160	0.1112	380	TCEQ Long-Term AMCV	0.0003
Naphthalene	91-20-3	13	3	0.1280	0.0396	0.57	EPA Inhalation RfCi	0.0692
Nonane	111-84-2	13	6	0.1750	0.0704	3.8	EPA Inhalation RfCi	0.0185
o-Xylene	95-47-6	13	10	0.2730	0.133	23	EPA RSL Non-Cancer	0.0058
Pentane	109-66-0	13	11	12.0000	1.7441	338	EPA Inhalation RfCi	0.0051
Propane	74-98-6	13	12	51.6000	4.113	NA	NA	
Propylbenzene	103-65-1	13	3	0.1360	0.0601	203	EPA Inhalation RfCi	0.0003
Propylene	115-07-1	13	12	3.2800	0.3134	1,801	EPA RSL Non-Cancer	0.0002
Tetrachloroethene	127-18-4	13	5	0.1970	0.0811	5.9	EPA Inhalation RfCi	0.0138
Toluene	108-88-3	13	12	1.7400	0.8411	1,327	EPA Inhalation RfCi	0.0006
Trans-2-Butene	624-64-6	13	5	0.7620	0.0406	700	TCEQ Long-Term AMCV	0.0001
Trans-2-Pentene	646-04-8	13	4	0.4990	0.1576	560	TCEQ Long-Term AMCV	0.0003
Undecane	1120-21-4	13	8	0.2973	0.1299	55	TCEQ Long-Term AMCV	0.0024
							Hazard Index	0.4660

All results presented in parts per billion by volume (ppbv).
NA= Health reference level not available.
Results averaged using EPA time-weighted average (TWA) equation (see methods).
Laboratory non-detections are reported as less than ("<") the method detection limit (MDL) as maximum detection and 1/2 MDL in the time-weighted average calculation.

Summa Canister Data Summary and Risk Assessment
CM5 - Central | Q3 2021 - Q1 2023

Compound Name	Cas No.	# Samples	# Detections	Maximum Detections	Time-weighted Average (ppb)	Health Reference Level (ppb)	Screening Value Source	Hazard Quotients
1-Butene	106-98-9	14	9	0.4270	0.0463	2300	TCEQ Long-Term AMCV	0.0000
1-Hexene	592-41-6	14	0	< 0.0654	0.0265	50	TCEQ Long-Term AMCV	0.0005
1-Pentene	109-67-1	14	2	0.1180	0.0272	560	TCEQ Long-Term AMCV	0.0000
1,2,3-Trimethylbenzene	526-73-8	14	3	0.1140	0.0535	12	EPA Inhalation RfCi	0.0044
1,2,4-Trimethylbenzene	95-63-6	14	7	0.1250	0.0532	12	EPA Inhalation RfCi	0.0044
1,3-Butadiene	106-99-0	14	8	0.1840	0.0764	0.95	EPA RSL Non-Cancer	0.0805
1,3-Diethylbenzene	141-93-5	14	2	0.0722	0.0341	45	TCEQ Long-Term AMCV	0.0008
1,3,5-Trimethylbenzene	108-67-8	14	2	0.0867	0.0399	12	EPA Inhalation RfCi	0.0033
1,4-Diethylbenzene	105-05-5	14	3	0.0853	0.0268	45	TCEQ Long-Term AMCV	0.0006
2-Ethyltoluene	611-14-3	14	0	< 0.0654	0.0265	25	TCEQ Long-Term AMCV	0.0011
2-Methylheptane	592-27-8	14	1	0.1190	0.0269	380	TCEQ Long-Term AMCV	0.0001
2-Methylhexane	591-76-4	14	8	0.3600	0.0582	2200	TCEQ Long-Term AMCV	0.0000
2-Methylpentane	107-83-5	14	12	0.9510	0.1798	190	TCEQ Long-Term AMCV	0.0009
2,2-Dimethylbutane	75-83-2	14	1	0.1030	0.027	190	TCEQ Long-Term AMCV	0.0001
2,2,4-Trimethylpentane	540-84-1	14	8	0.2070	0.069	380	TCEQ Long-Term AMCV	0.0002
2,3-Dimethylbutane	79-29-8	14	5	0.1830	0.0401	190	TCEQ Long-Term AMCV	0.0002
2,3-Dimethylpentane	565-59-3	14	6	0.2390	0.0598	2200	TCEQ Long-Term AMCV	0.0000
2,3,4-Trimethylpentane	565-75-3	14	1	0.0674	0.0268	380	TCEQ Long-Term AMCV	0.0001
2,4-Dimethylpentane	108-08-7	14	5	0.3100	0.084	2200	TCEQ Long-Term AMCV	0.0000
3-Ethyltoluene	620-14-4	14	6	0.1320	0.0412	25	TCEQ Long-Term AMCV	0.0016
3-Methylheptane	589-81-1	14	4	0.3900	0.1617	380	TCEQ Long-Term AMCV	0.0004
3-Methylhexane	589-34-4	14	11	0.4030	0.1484	2200	TCEQ Long-Term AMCV	0.0001
3-Methylpentane	96-14-0	14	11	0.5871	0.1699	190	TCEQ Long-Term AMCV	0.0009
4-Ethyltoluene	622-96-8	14	2	0.0909	0.0417	25	TCEQ Long-Term AMCV	0.0017
Acetylene	74-86-2	14	13	1.9300	0.6574	2500	TCEQ Long-Term AMCV	0.0003
Benzene	71-43-2	14	13	0.4050	0.2293	3	ATSDR Chronic MRL	0.0764
Butane	106-97-8	14	13	6.2000	1.9164	10000	TCEQ Long-Term AMCV	0.0002
Carbon disulfide	75-15-0	14	3	0.2670	0.1026	225	EPA Inhalation RfCi	0.0005
Cis-2-Butene	590-18-1	14	1	0.1890	0.027	700	TCEQ Long-Term AMCV	0.0000
Cis-2-Pentene	627-20-3	14	1	0.0667	0.0264	560	TCEQ Long-Term AMCV	0.0000
Cyclohexane	110-82-7	14	11	0.4450	0.1465	1,743	EPA Inhalation RfCi	0.0001
Cyclopentane	287-92-3	14	8	0.2250	0.0383	590	TCEQ Long-Term AMCV	0.0001
Decane	124-18-5	14	3	0.1424	0.0633	190	TCEQ Long-Term AMCV	0.0003
Dodecane	112-40-3	14	4	0.2479	0.0976	3.8	CDPHE Chronic	0.0257
Ethane	74-84-0	14	13	17.6000	7.9585	NA	NA	
Ethylbenzene	100-41-4	14	7	0.1790	0.0817	230	EPA Inhalation RfCi	0.0004
Ethylene	74-85-1	14	13	3.4600	1.0226	5300	TCEQ Long-Term AMCV	0.0002
Heptane	142-82-5	14	10	0.4440	0.1683	98	EPA Inhalation RfCi	0.0017
Hexane	110-54-3	14	12	0.8300	0.3563	199	EPA Inhalation RfCi	0.0018
Isobutane	75-28-5	14	13	1.9600	0.6776	10000	TCEQ Long-Term AMCV	0.0001
Isopentane	78-78-4	14	13	3.9000	1.129	8100	TCEQ Long-Term AMCV	0.0001
Isoprene	78-79-5	14	4	0.2030	0.0275	140	TCEQ Long-Term AMCV	0.0002
Isopropylbenzene	98-82-8	14	2	0.0893	0.0364	81	EPA Inhalation RfCi	0.0004
m,p-Xylenes	108-38-3..	14	13	0.4770	0.2219	23	EPA RSL Non-Cancer	0.0096
Methylcyclohexane	108-87-2	14	6	0.4160	0.0799	400	TCEQ Long-Term AMCV	0.0002
Methylcyclopentane	96-37-7	14	9	0.7980	0.1258	75	TCEQ Long-Term AMCV	0.0017
n-Octane	111-65-9	14	7	0.1470	0.0619	380	TCEQ Long-Term AMCV	0.0002
Naphthalene	91-20-3	14	2	0.1980	0.095	0.57	EPA Inhalation RfCi	0.1660
Nonane	111-84-2	14	4	0.1130	0.0502	3.8	EPA Inhalation RfCi	0.0132
o-Xylene	95-47-6	14	8	0.1570	0.0849	23	EPA RSL Non-Cancer	0.0037
Pentane	109-66-0	14	13	2.5400	0.8146	338	EPA Inhalation RfCi	0.0024
Propane	74-98-6	14	13	7.1437	3.8091	NA	NA	
Propylbenzene	103-65-1	14	2	0.1010	0.0405	203	EPA Inhalation RfCi	0.0002
Propylene	115-07-1	14	13	0.6940	0.2237	1,801	EPA RSL Non-Cancer	0.0001
Tetrachloroethene	127-18-4	14	3	0.1210	0.0481	5.9	EPA Inhalation RfCi	0.0082
Toluene	108-88-3	14	13	1.1300	0.4567	1,327	EPA Inhalation RfCi	0.0003
Trans-2-Butene	624-64-6	14	2	0.2290	0.0271	700	TCEQ Long-Term AMCV	0.0000
Trans-2-Pentene	646-04-8	14	3	0.3860	0.0296	560	TCEQ Long-Term AMCV	0.0001
Undecane	1120-21-4	14	8	0.1502	0.0724	55	TCEQ Long-Term AMCV	0.0013
							Hazard Index	0.4176

All results presented in parts per billion by volume (ppbv).
NA= Health reference level not available.
Results averaged using EPA time-weighted average (TWA) equation (see methods).
Laboratory non-detections are reported as less than ("<") the method detection limit (MDL) as maximum detection and 1/2 MDL in the time-weighted average calculation.

Summa Canister Data Summary and Risk Assessment
CM6 - Focus | Q3 2021 - Q1 2023

Compound Name	Cas No.	# Samples	# Detections	Maximum Detections	Time-weighted Average (ppb)	Health Reference Level (ppb)	Screening Value Source	Hazard Quotients
1-Butene	106-98-9	11	5	0.2310	0.0768	2300	TCEQ Long-Term AMCV	0.0000
1-Hexene	592-41-6	11	0	< 0.0637	0.0286	50	TCEQ Long-Term AMCV	0.0006
1-Pentene	109-67-1	11	3	0.1017	0.0521	560	TCEQ Long-Term AMCV	0.0001
1,2,3-Trimethylbenzene	526-73-8	11	1	0.0812	0.0444	12	EPA Inhalation RfCi	0.0036
1,2,4-Trimethylbenzene	95-63-6	11	5	0.1030	0.056	12	EPA Inhalation RfCi	0.0046
1,3-Butadiene	106-99-0	11	3	0.1690	0.0551	0.95	EPA RSL Non-Cancer	0.0580
1,3-Diethylbenzene	141-93-5	11	0	< 0.0637	0.0279	45	TCEQ Long-Term AMCV	0.0006
1,3,5-Trimethylbenzene	108-67-8	11	1	0.0906	0.0274	12	EPA Inhalation RfCi	0.0022
1,4-Diethylbenzene	105-05-5	11	2	0.0822	0.0286	45	TCEQ Long-Term AMCV	0.0006
2-Ethyltoluene	611-14-3	11	0	< 0.0637	0.0284	25	TCEQ Long-Term AMCV	0.0011
2-Methylheptane	592-27-8	11	1	0.0666	0.0402	380	TCEQ Long-Term AMCV	0.0001
2-Methylhexane	591-76-4	11	6	0.1240	0.0676	2200	TCEQ Long-Term AMCV	0.0000
2-Methylpentane	107-83-5	11	7	0.5240	0.3444	190	TCEQ Long-Term AMCV	0.0018
2,2-Dimethylbutane	75-83-2	11	4	0.0833	0.0402	190	TCEQ Long-Term AMCV	0.0002
2,2,4-Trimethylpentane	540-84-1	11	7	0.1540	0.0541	380	TCEQ Long-Term AMCV	0.0001
2,3-Dimethylbutane	79-29-8	11	6	0.1160	0.0691	190	TCEQ Long-Term AMCV	0.0004
2,3-Dimethylpentane	565-59-3	11	4	0.1330	0.0577	2200	TCEQ Long-Term AMCV	0.0000
2,3,4-Trimethylpentane	565-75-3	11	0	< 0.0637	0.0287	380	TCEQ Long-Term AMCV	0.0001
2,4-Dimethylpentane	108-08-7	11	4	0.2435	0.0912	2200	TCEQ Long-Term AMCV	0.0000
3-Ethyltoluene	620-14-4	11	4	0.1260	0.0419	25	TCEQ Long-Term AMCV	0.0017
3-Methylheptane	589-81-1	11	3	0.4500	0.1691	380	TCEQ Long-Term AMCV	0.0004
3-Methylhexane	589-34-4	11	7	0.3000	0.193	2200	TCEQ Long-Term AMCV	0.0001
3-Methylpentane	96-14-0	11	6	0.3580	0.1963	190	TCEQ Long-Term AMCV	0.0010
4-Ethyltoluene	622-96-8	11	1	0.0923	0.0304	25	TCEQ Long-Term AMCV	0.0012
Acetylene	74-86-2	11	10	2.5200	0.6034	2500	TCEQ Long-Term AMCV	0.0002
Benzene	71-43-2	11	10	0.3710	0.2084	3	ATSDR Chronic MRL	0.0695
Butane	106-97-8	11	10	4.5100	2.6136	10000	TCEQ Long-Term AMCV	0.0003
Carbon disulfide	75-15-0	11	2	0.1300	0.0484	225	EPA Inhalation RfCi	0.0002
Cis-2-Butene	590-18-1	11	3	0.1260	0.0591	700	TCEQ Long-Term AMCV	0.0001
Cis-2-Pentene	627-20-3	11	0	< 0.0637	0.0283	560	TCEQ Long-Term AMCV	0.0001
Cyclohexane	110-82-7	11	10	0.3150	0.1708	1,743	EPA Inhalation RfCi	0.0001
Cyclopentane	287-92-3	11	8	0.4370	0.0792	590	TCEQ Long-Term AMCV	0.0001
Decane	124-18-5	11	3	0.1119	0.0638	190	TCEQ Long-Term AMCV	0.0003
Dodecane	112-40-3	11	4	0.1510	0.0664	3.8	CDPHE Chronic	0.0175
Ethane	74-84-0	11	10	15.5000	8.3022	NA	NA	
Ethylbenzene	100-41-4	11	7	0.1639	0.0826	230	EPA Inhalation RfCi	0.0004
Ethylene	74-85-1	11	10	2.8700	1.1157	5300	TCEQ Long-Term AMCV	0.0002
Heptane	142-82-5	11	10	0.3180	0.1853	98	EPA Inhalation RfCi	0.0019
Hexane	110-54-3	11	10	0.6330	0.4202	199	EPA Inhalation RfCi	0.0021
Isobutane	75-28-5	11	10	1.7200	1.0172	10000	TCEQ Long-Term AMCV	0.0001
Isopentane	78-78-4	11	9	2.2800	1.0579	8100	TCEQ Long-Term AMCV	0.0001
Isoprene	78-79-5	11	2	0.1070	0.029	140	TCEQ Long-Term AMCV	0.0002
Isopropylbenzene	98-82-8	11	1	0.0887	0.0269	81	EPA Inhalation RfCi	0.0003
m,p-Xylenes	108-38-3..	11	10	0.6290	0.2663	23	EPA RSL Non-Cancer	0.0116
Methylcyclohexane	108-87-2	11	6	0.1660	0.0986	400	TCEQ Long-Term AMCV	0.0002
Methylcyclopentane	96-37-7	11	7	0.3040	0.2315	75	TCEQ Long-Term AMCV	0.0031
n-Octane	111-65-9	11	6	0.1310	0.0802	380	TCEQ Long-Term AMCV	0.0002
Naphthalene	91-20-3	11	2	0.0717	0.0307	0.57	EPA Inhalation RfCi	0.0536
Nonane	111-84-2	11	4	0.1106	0.0659	3.8	EPA Inhalation RfCi	0.0173
o-Xylene	95-47-6	11	7	0.1634	0.0901	23	EPA RSL Non-Cancer	0.0039
Pentane	109-66-0	11	10	1.7700	1.2053	338	EPA Inhalation RfCi	0.0036
Propane	74-98-6	11	10	8.7800	4.5404	NA	NA	
Propylbenzene	103-65-1	11	1	0.0978	0.0271	203	EPA Inhalation RfCi	0.0001
Propylene	115-07-1	11	10	0.5650	0.2865	1,801	EPA RSL Non-Cancer	0.0002
Tetrachloroethene	127-18-4	11	1	0.1250	0.0281	5.9	EPA Inhalation RfCi	0.0048
Toluene	108-88-3	11	10	0.5520	0.4608	1,327	EPA Inhalation RfCi	0.0003
Trans-2-Butene	624-64-6	11	2	0.1400	0.0642	700	TCEQ Long-Term AMCV	0.0001
Trans-2-Pentene	646-04-8	11	3	0.5080	0.1385	560	TCEQ Long-Term AMCV	0.0002
Undecane	1120-21-4	11	4	0.1461	0.0795	55	TCEQ Long-Term AMCV	0.0014
							Hazard Index	0.2733

All results presented in parts per billion by volume (ppbv).
NA= Health reference level not available.
Results averaged using EPA time-weighted average (TWA) equation (see methods).
Laboratory non-detections are reported as less than ("<") the method detection limit (MDL) as maximum detection and 1/2 MDL in the time-weighted average calculation.

Summa Canister Data Summary and Risk Assessment
CM7 - Kearney | Q3 2021 - Q1 2023

Compound Name	Cas No.	# Samples	# Detections	Maximum Detections	Time-weighted Average (ppb)	Health Reference Level (ppb)	Screening Value Source	Hazard Quotients
1-Butene	106-98-9	13	6	1.1000	0.3809	2300	TCEQ Long-Term AMCV	0.0002
1-Hexene	592-41-6	13	0	< 0.0640	0.0266	50	TCEQ Long-Term AMCV	0.0005
1-Pentene	109-67-1	13	2	0.0908	0.0271	560	TCEQ Long-Term AMCV	0.0000
1,2,3-Trimethylbenzene	526-73-8	13	4	0.1290	0.0398	12	EPA Inhalation RfCi	0.0033
1,2,4-Trimethylbenzene	95-63-6	13	8	0.3480	0.0631	12	EPA Inhalation RfCi	0.0052
1,3-Butadiene	106-99-0	13	6	0.1590	0.0698	0.95	EPA RSL Non-Cancer	0.0735
1,3-Diethylbenzene	141-93-5	13	1	0.0640	0.0387	45	TCEQ Long-Term AMCV	0.0009
1,3,5-Trimethylbenzene	108-67-8	13	3	0.0917	0.0392	12	EPA Inhalation RfCi	0.0032
1,4-Diethylbenzene	105-05-5	13	5	0.0958	0.0376	45	TCEQ Long-Term AMCV	0.0008
2-Ethyltoluene	611-14-3	13	1	0.0888	0.0267	25	TCEQ Long-Term AMCV	0.0011
2-Methylheptane	592-27-8	13	2	0.0813	0.0433	380	TCEQ Long-Term AMCV	0.0001
2-Methylhexane	591-76-4	13	5	0.1221	0.0586	2200	TCEQ Long-Term AMCV	0.0000
2-Methylpentane	107-83-5	13	11	1.0626	0.2243	190	TCEQ Long-Term AMCV	0.0012
2,2-Dimethylbutane	75-83-2	13	3	0.1432	0.0272	190	TCEQ Long-Term AMCV	0.0001
2,2,4-Trimethylpentane	540-84-1	13	7	0.2330	0.0698	380	TCEQ Long-Term AMCV	0.0002
2,3-Dimethylbutane	79-29-8	13	7	0.3066	0.083	190	TCEQ Long-Term AMCV	0.0004
2,3-Dimethylpentane	565-59-3	13	5	0.3140	0.0498	2200	TCEQ Long-Term AMCV	0.0000
2,3,4-Trimethylpentane	565-75-3	13	1	0.1536	0.0669	380	TCEQ Long-Term AMCV	0.0002
2,4-Dimethylpentane	108-08-7	13	4	0.6681	0.0785	2200	TCEQ Long-Term AMCV	0.0000
3-Ethyltoluene	620-14-4	13	5	0.2838	0.0275	25	TCEQ Long-Term AMCV	0.0011
3-Methylheptane	589-81-1	13	4	0.1747	0.0979	380	TCEQ Long-Term AMCV	0.0003
3-Methylhexane	589-34-4	13	8	0.3800	0.1094	2200	TCEQ Long-Term AMCV	0.0000
3-Methylpentane	96-14-0	13	10	0.8349	0.2135	190	TCEQ Long-Term AMCV	0.0011
4-Ethyltoluene	622-96-8	13	3	0.0970	0.0421	25	TCEQ Long-Term AMCV	0.0017
Acetylene	74-86-2	13	11	1.9700	0.6386	2500	TCEQ Long-Term AMCV	0.0003
Benzene	71-43-2	13	12	0.5600	0.2385	3	ATSDR Chronic MRL	0.0795
Butane	106-97-8	13	12	8.1000	1.9457	10000	TCEQ Long-Term AMCV	0.0002
Carbon disulfide	75-15-0	13	2	0.6330	0.2223	225	EPA Inhalation RfCi	0.0010
Cis-2-Butene	590-18-1	13	3	0.2570	0.0275	700	TCEQ Long-Term AMCV	0.0000
Cis-2-Pentene	627-20-3	13	2	0.0864	0.0266	560	TCEQ Long-Term AMCV	0.0000
Cyclohexane	110-82-7	13	12	0.6790	0.1434	1,743	EPA Inhalation RfCi	0.0001
Cyclopentane	287-92-3	13	6	0.3340	0.0422	590	TCEQ Long-Term AMCV	0.0001
Decane	124-18-5	13	5	0.2430	0.0832	190	TCEQ Long-Term AMCV	0.0004
Dodecane	112-40-3	13	4	0.2477	0.0978	3.8	CDPHE Chronic	0.0257
Ethane	74-84-0	13	12	26.0000	8.3647	NA	NA	
Ethylbenzene	100-41-4	13	9	0.3850	0.0779	230	EPA Inhalation RfCi	0.0003
Ethylene	74-85-1	13	12	3.2100	1.0646	5300	TCEQ Long-Term AMCV	0.0002
Heptane	142-82-5	13	12	0.5200	0.149	98	EPA Inhalation RfCi	0.0015
Hexane	110-54-3	13	12	1.1000	0.3389	199	EPA Inhalation RfCi	0.0017
Isobutane	75-28-5	13	11	2.5000	0.7689	10000	TCEQ Long-Term AMCV	0.0001
Isopentane	78-78-4	13	12	3.0129	1.2557	8100	TCEQ Long-Term AMCV	0.0002
Isoprene	78-79-5	13	1	0.0798	0.0269	140	TCEQ Long-Term AMCV	0.0002
Isopropylbenzene	98-82-8	13	2	0.0814	0.036	81	EPA Inhalation RfCi	0.0004
m,p-Xylenes	108-38-3..	13	12	0.9620	0.2146	23	EPA RSL Non-Cancer	0.0093
Methylcyclohexane	108-87-2	13	4	0.1380	0.0864	400	TCEQ Long-Term AMCV	0.0002
Methylcyclopentane	96-37-7	13	8	0.4200	0.128	75	TCEQ Long-Term AMCV	0.0017
n-Octane	111-65-9	13	7	0.2570	0.058	380	TCEQ Long-Term AMCV	0.0002
Naphthalene	91-20-3	13	4	0.0830	0.057	0.57	EPA Inhalation RfCi	0.0996
Nonane	111-84-2	13	5	0.1931	0.0425	3.8	EPA Inhalation RfCi	0.0111
o-Xylene	95-47-6	13	8	0.3580	0.0826	23	EPA RSL Non-Cancer	0.0036
Pentane	109-66-0	13	12	2.5000	0.8184	338	EPA Inhalation RfCi	0.0024
Propane	74-98-6	13	12	14.0000	3.772	NA	NA	
Propylbenzene	103-65-1	13	3	0.0948	0.0402	203	EPA Inhalation RfCi	0.0002
Propylene	115-07-1	13	12	0.6030	0.2301	1,801	EPA RSL Non-Cancer	0.0001
Tetrachloroethene	127-18-4	13	2	0.1090	0.047	5.9	EPA Inhalation RfCi	0.0080
Toluene	108-88-3	13	12	1.7300	0.4327	1,327	EPA Inhalation RfCi	0.0003
Trans-2-Butene	624-64-6	13	2	0.2080	0.0271	700	TCEQ Long-Term AMCV	0.0000
Trans-2-Pentene	646-04-8	13	2	0.4340	0.0291	560	TCEQ Long-Term AMCV	0.0001
Undecane	1120-21-4	13	7	0.1494	0.064	55	TCEQ Long-Term AMCV	0.0012
							Hazard Index	0.3453

All results presented in parts per billion by volume (ppbv).
NA= Health reference level not available.
Results averaged using EPA time-weighted average (TWA) equation (see methods).
Laboratory non-detections are reported as less than ("<") the method detection limit (MDL) as maximum detection and 1/2 MDL in the time-weighted average calculation.

Summa Canister Data Summary and Risk Assessment
CM8 - Monroe | Q3 2021 - Q1 2023

Compound Name	Cas No.	# Samples	# Detections	Maximum Detections	Time-weighted Average (ppb)	Health Reference Level (ppb)	Screening Value Source	Hazard Quotients
1-Butene	106-98-9	11	7	0.5750	0.0878	2300	TCEQ Long-Term AMCV	0.0000
1-Hexene	592-41-6	11	0	< 0.0631	0.0271	50	TCEQ Long-Term AMCV	0.0005
1-Pentene	109-67-1	11	4	0.3190	0.0383	560	TCEQ Long-Term AMCV	0.0001
1,2,3-Trimethylbenzene	526-73-8	11	6	0.1929	0.0787	12	EPA Inhalation RfCi	0.0064
1,2,4-Trimethylbenzene	95-63-6	11	6	0.3050	0.068	12	EPA Inhalation RfCi	0.0056
1,3-Butadiene	106-99-0	11	3	0.1580	0.0601	0.95	EPA RSL Non-Cancer	0.0633
1,3-Diethylbenzene	141-93-5	11	1	0.1197	0.0266	45	TCEQ Long-Term AMCV	0.0006
1,3,5-Trimethylbenzene	108-67-8	11	3	0.1120	0.0427	12	EPA Inhalation RfCi	0.0035
1,4-Diethylbenzene	105-05-5	11	4	0.1431	0.041	45	TCEQ Long-Term AMCV	0.0009
2-Ethyltoluene	611-14-3	11	1	0.1495	0.0272	25	TCEQ Long-Term AMCV	0.0011
2-Methylheptane	592-27-8	11	3	0.2500	0.0365	380	TCEQ Long-Term AMCV	0.0001
2-Methylhexane	591-76-4	11	4	0.7290	0.0618	2200	TCEQ Long-Term AMCV	0.0000
2-Methylpentane	107-83-5	11	8	3.4800	0.2239	190	TCEQ Long-Term AMCV	0.0012
2,2-Dimethylbutane	75-83-2	11	2	0.3590	0.0279	190	TCEQ Long-Term AMCV	0.0001
2,2,4-Trimethylpentane	540-84-1	11	6	0.2370	0.0565	380	TCEQ Long-Term AMCV	0.0001
2,3-Dimethylbutane	79-29-8	11	6	0.7560	0.1224	190	TCEQ Long-Term AMCV	0.0006
2,3-Dimethylpentane	565-59-3	11	7	0.2870	0.0865	2200	TCEQ Long-Term AMCV	0.0000
2,3,4-Trimethylpentane	565-75-3	11	1	0.0631	0.0273	380	TCEQ Long-Term AMCV	0.0001
2,4-Dimethylpentane	108-08-7	11	6	0.3310	0.1042	2200	TCEQ Long-Term AMCV	0.0000
3-Ethyltoluene	620-14-4	11	4	0.1490	0.0395	25	TCEQ Long-Term AMCV	0.0016
3-Methylheptane	589-81-1	11	6	0.6720	0.3004	380	TCEQ Long-Term AMCV	0.0008
3-Methylhexane	589-34-4	11	6	0.7240	0.1459	2200	TCEQ Long-Term AMCV	0.0001
3-Methylpentane	96-14-0	11	9	2.0500	0.2174	190	TCEQ Long-Term AMCV	0.0011
4-Ethyltoluene	622-96-8	11	3	0.1180	0.0402	25	TCEQ Long-Term AMCV	0.0016
Acetylene	74-86-2	11	10	1.9900	0.5607	2500	TCEQ Long-Term AMCV	0.0002
Benzene	71-43-2	11	10	1.1100	0.2459	3	ATSDR Chronic MRL	0.0820
Butane	106-97-8	11	10	14.7000	2.4946	10000	TCEQ Long-Term AMCV	0.0002
Carbon disulfide	75-15-0	11	4	0.2810	0.092	225	EPA Inhalation RfCi	0.0004
Cis-2-Butene	590-18-1	11	2	1.1500	0.0301	700	TCEQ Long-Term AMCV	0.0000
Cis-2-Pentene	627-20-3	11	2	0.2860	0.0274	560	TCEQ Long-Term AMCV	0.0000
Cyclohexane	110-82-7	11	9	1.4200	0.1466	1,743	EPA Inhalation RfCi	0.0001
Cyclopentane	287-92-3	11	7	0.8760	0.0717	590	TCEQ Long-Term AMCV	0.0001
Decane	124-18-5	11	6	0.1960	0.0784	190	TCEQ Long-Term AMCV	0.0004
Dodecane	112-40-3	11	3	0.1573	0.054	3.8	CDPHE Chronic	0.0142
Ethane	74-84-0	11	10	20.2000	6.7915	NA	NA	
Ethylbenzene	100-41-4	11	6	0.2960	0.0743	230	EPA Inhalation RfCi	0.0003
Ethylene	74-85-1	11	8	2.9300	0.9969	5300	TCEQ Long-Term AMCV	0.0002
Heptane	142-82-5	11	9	0.7600	0.1715	98	EPA Inhalation RfCi	0.0018
Hexane	110-54-3	11	10	3.2600	0.453	199	EPA Inhalation RfCi	0.0023
Isobutane	75-28-5	11	10	5.9600	0.9108	10000	TCEQ Long-Term AMCV	0.0001
Isopentane	78-78-4	11	10	17.9000	1.4807	8100	TCEQ Long-Term AMCV	0.0002
Isoprene	78-79-5	11	2	0.0910	0.0275	140	TCEQ Long-Term AMCV	0.0002
Isopropylbenzene	98-82-8	11	1	0.0976	0.0257	81	EPA Inhalation RfCi	0.0003
m,p-Xylenes	108-38-3..	11	9	1.0900	0.1812	23	EPA RSL Non-Cancer	0.0079
Methylcyclohexane	108-87-2	11	6	0.6090	0.0963	400	TCEQ Long-Term AMCV	0.0002
Methylcyclopentane	96-37-7	11	6	1.3300	0.1302	75	TCEQ Long-Term AMCV	0.0017
n-Octane	111-65-9	11	5	0.2930	0.0712	380	TCEQ Long-Term AMCV	0.0002
Naphthalene	91-20-3	11	1	0.0776	0.0288	0.57	EPA Inhalation RfCi	0.0503
Nonane	111-84-2	11	7	0.3320	0.1582	3.8	EPA Inhalation RfCi	0.0415
o-Xylene	95-47-6	11	6	0.3670	0.08	23	EPA RSL Non-Cancer	0.0035
Pentane	109-66-0	11	10	11.8000	1.1158	338	EPA Inhalation RfCi	0.0033
Propane	74-98-6	11	10	38.3000	6.1455	NA	NA	
Propylbenzene	103-65-1	11	3	0.1150	0.0389	203	EPA Inhalation RfCi	0.0002
Propylene	115-07-1	11	10	2.3200	0.2318	1,801	EPA RSL Non-Cancer	0.0001
Tetrachloroethene	127-18-4	11	3	0.1210	0.0587	5.9	EPA Inhalation RfCi	0.0100
Toluene	108-88-3	11	10	2.1600	0.436	1,327	EPA Inhalation RfCi	0.0003
Trans-2-Butene	624-64-6	11	3	1.2100	0.0414	700	TCEQ Long-Term AMCV	0.0001
Trans-2-Pentene	646-04-8	11	3	0.6890	0.0304	560	TCEQ Long-Term AMCV	0.0001
Undecane	1120-21-4	11	7	0.1669	0.069	55	TCEQ Long-Term AMCV	0.0013
							Hazard Index	0.3134

All results presented in parts per billion by volume (ppbv).
NA= Health reference level not available.
Results averaged using EPA time-weighted average (TWA) equation (see methods).
Laboratory non-detections are reported as less than ("<") the method detection limit (MDL) as maximum detection and 1/2 MDL in the time-weighted average calculation.

Summa Canister Data Summary and Risk Assessment
CM9 - 48th and Race | Q3 2021 - Q1 2023

Compound Name	Cas No.	# Samples	# Detections	Maximum Detections	Time-weighted Average (ppb)	Health Reference Level (ppb)	Screening Value Source	Hazard Quotients
1-Butene	106-98-9	11	8	2.9000	0.0904	2300	TCEQ Long-Term AMCV	0.0000
1-Hexene	592-41-6	11	2	0.0949	0.0274	50	TCEQ Long-Term AMCV	0.0005
1-Pentene	109-67-1	11	6	0.1010	0.0547	560	TCEQ Long-Term AMCV	0.0001
1,2,3-Trimethylbenzene	526-73-8	11	7	0.4580	0.0911	12	EPA Inhalation RfCi	0.0075
1,2,4-Trimethylbenzene	95-63-6	11	10	1.3060	0.1347	12	EPA Inhalation RfCi	0.0110
1,3-Butadiene	106-99-0	11	7	0.2430	0.0771	0.95	EPA RSL Non-Cancer	0.0812
1,3-Diethylbenzene	141-93-5	11	1	0.4200	0.0273	45	TCEQ Long-Term AMCV	0.0006
1,3,5-Trimethylbenzene	108-67-8	11	4	0.4977	0.0498	12	EPA Inhalation RfCi	0.0041
1,4-Diethylbenzene	105-05-5	11	4	0.2170	0.0577	45	TCEQ Long-Term AMCV	0.0013
2-Ethyltoluene	611-14-3	11	2	0.1010	0.0272	25	TCEQ Long-Term AMCV	0.0011
2-Methylheptane	592-27-8	11	4	0.2340	0.0402	380	TCEQ Long-Term AMCV	0.0001
2-Methylhexane	591-76-4	11	6	0.5790	0.0935	2200	TCEQ Long-Term AMCV	0.0000
2-Methylpentane	107-83-5	11	11	1.5800	0.2358	190	TCEQ Long-Term AMCV	0.0012
2,2-Dimethylbutane	75-83-2	11	6	0.2110	0.0284	190	TCEQ Long-Term AMCV	0.0001
2,2,4-Trimethylpentane	540-84-1	11	10	0.7190	0.1037	380	TCEQ Long-Term AMCV	0.0003
2,3-Dimethylbutane	79-29-8	11	6	0.3810	0.1165	190	TCEQ Long-Term AMCV	0.0006
2,3-Dimethylpentane	565-59-3	11	7	0.3260	0.0987	2200	TCEQ Long-Term AMCV	0.0000
2,3,4-Trimethylpentane	565-75-3	11	1	0.1410	0.0275	380	TCEQ Long-Term AMCV	0.0001
2,4-Dimethylpentane	108-08-7	11	6	0.8150	0.0923	2200	TCEQ Long-Term AMCV	0.0000
3-Ethyltoluene	620-14-4	11	8	0.3210	0.1139	25	TCEQ Long-Term AMCV	0.0046
3-Methylheptane	589-81-1	11	4	0.2220	0.081	380	TCEQ Long-Term AMCV	0.0002
3-Methylhexane	589-34-4	11	8	0.6410	0.1558	2200	TCEQ Long-Term AMCV	0.0001
3-Methylpentane	96-14-0	11	10	1.5600	0.378	190	TCEQ Long-Term AMCV	0.0020
4-Ethyltoluene	622-96-8	11	4	0.4250	0.0469	25	TCEQ Long-Term AMCV	0.0019
Acetylene	74-86-2	11	11	2.6700	0.8973	2500	TCEQ Long-Term AMCV	0.0004
Benzene	71-43-2	11	11	0.5590	0.2573	3	ATSDR Chronic MRL	0.0858
Butane	106-97-8	11	11	49.7000	2.8756	10000	TCEQ Long-Term AMCV	0.0003
Carbon disulfide	75-15-0	11	4	0.3960	0.1458	225	EPA Inhalation RfCi	0.0006
Cis-2-Butene	590-18-1	11	5	0.1650	0.0394	700	TCEQ Long-Term AMCV	0.0001
Cis-2-Pentene	627-20-3	11	3	0.1290	0.0273	560	TCEQ Long-Term AMCV	0.0000
Cyclohexane	110-82-7	11	9	1.2270	0.193	1,743	EPA Inhalation RfCi	0.0001
Cyclopentane	287-92-3	11	8	0.5250	0.0601	590	TCEQ Long-Term AMCV	0.0001
Decane	124-18-5	11	9	1.5400	0.1783	190	TCEQ Long-Term AMCV	0.0009
Dodecane	112-40-3	11	10	0.2658	0.1621	3.8	CDPHE Chronic	0.0427
Ethane	74-84-0	11	11	63.0000	31.5881	NA	NA	
Ethylbenzene	100-41-4	11	10	2.6500	0.1429	230	EPA Inhalation RfCi	0.0006
Ethylene	74-85-1	11	11	11.0000	1.9809	5300	TCEQ Long-Term AMCV	0.0004
Heptane	142-82-5	11	11	1.0710	0.1945	98	EPA Inhalation RfCi	0.0020
Hexane	110-54-3	11	11	1.8900	0.3931	199	EPA Inhalation RfCi	0.0020
Isobutane	75-28-5	11	11	32.1000	1.2202	10000	TCEQ Long-Term AMCV	0.0001
Isopentane	78-78-4	11	11	56.2000	3.7196	8100	TCEQ Long-Term AMCV	0.0005
Isoprene	78-79-5	11	1	0.2290	0.0277	140	TCEQ Long-Term AMCV	0.0002
Isopropylbenzene	98-82-8	11	2	0.0952	0.0395	81	EPA Inhalation RfCi	0.0005
m,p-Xylenes	108-38-3..	11	11	11.7000	0.4096	23	EPA RSL Non-Cancer	0.0178
Methylcyclohexane	108-87-2	11	7	0.7390	0.0938	400	TCEQ Long-Term AMCV	0.0002
Methylcyclopentane	96-37-7	11	5	0.9970	0.1358	75	TCEQ Long-Term AMCV	0.0018
n-Octane	111-65-9	11	10	1.3000	0.0898	380	TCEQ Long-Term AMCV	0.0002
Naphthalene	91-20-3	11	3	0.1300	0.0427	0.57	EPA Inhalation RfCi	0.0746
Nonane	111-84-2	11	9	0.8780	0.1021	3.8	EPA Inhalation RfCi	0.0268
o-Xylene	95-47-6	11	10	2.9300	0.1576	23	EPA RSL Non-Cancer	0.0068
Pentane	109-66-0	11	11	61.1000	5.2069	338	EPA Inhalation RfCi	0.0154
Propane	74-98-6	11	10	107.0000	5.7407	NA	NA	
Propylbenzene	103-65-1	11	4	0.3710	0.0478	203	EPA Inhalation RfCi	0.0002
Propylene	115-07-1	11	11	0.9850	0.3449	1,801	EPA RSL Non-Cancer	0.0002
Tetrachloroethene	127-18-4	11	3	0.1280	0.0511	5.9	EPA Inhalation RfCi	0.0087
Toluene	108-88-3	11	11	23.8000	1.0798	1,327	EPA Inhalation RfCi	0.0008
Trans-2-Butene	624-64-6	11	5	0.1790	0.0395	700	TCEQ Long-Term AMCV	0.0001
Trans-2-Pentene	646-04-8	11	3	0.5090	0.0305	560	TCEQ Long-Term AMCV	0.0001
Undecane	1120-21-4	11	9	0.6620	0.1226	55	TCEQ Long-Term AMCV	0.0022
							Hazard Index	0.4119

All results presented in parts per billion by volume (ppbv).
NA= Health reference level not available.
Results averaged using EPA time-weighted average (TWA) equation (see methods).
Laboratory non-detections are reported as less than ("<") the method detection limit (MDL) as maximum detection and 1/2 MDL in the time-weighted average calculation.

Summa Canister Data Summary and Risk Assessment
CM10 - Alsup Elementary School | Q3 2021 - Q1 2023

Compound Name	Cas No.	# Samples	# Detections	Maximum Detections	Time-weighted Average (ppb)	Health Reference Level (ppb)	Screening Value Source	Hazard Quotients
1-Butene	106-98-9	10	5	1.3000	0.0601	2300	TCEQ Long-Term AMCV	0.0000
1-Hexene	592-41-6	10	0	< 0.0669	0.0267	50	TCEQ Long-Term AMCV	0.0005
1-Pentene	109-67-1	10	3	0.1497	0.0348	560	TCEQ Long-Term AMCV	0.0001
1,2,3-Trimethylbenzene	526-73-8	10	3	0.1275	0.0698	12	EPA Inhalation RfCi	0.0057
1,2,4-Trimethylbenzene	95-63-6	10	4	0.1080	0.0424	12	EPA Inhalation RfCi	0.0035
1,3-Butadiene	106-99-0	10	4	0.1610	0.0803	0.95	EPA RSL Non-Cancer	0.0846
1,3-Diethylbenzene	141-93-5	10	0	< 0.0669	0.026	45	TCEQ Long-Term AMCV	0.0006
1,3,5-Trimethylbenzene	108-67-8	10	2	0.1120	0.0388	12	EPA Inhalation RfCi	0.0032
1,4-Diethylbenzene	105-05-5	10	1	0.0883	0.0456	45	TCEQ Long-Term AMCV	0.0010
2-Ethyltoluene	611-14-3	10	1	0.0669	0.0371	25	TCEQ Long-Term AMCV	0.0015
2-Methylheptane	592-27-8	10	4	0.6137	0.2276	380	TCEQ Long-Term AMCV	0.0006
2-Methylhexane	591-76-4	10	4	0.3637	0.0592	2200	TCEQ Long-Term AMCV	0.0000
2-Methylpentane	107-83-5	10	7	0.8565	0.2596	190	TCEQ Long-Term AMCV	0.0014
2,2-Dimethylbutane	75-83-2	10	1	0.1209	0.0269	190	TCEQ Long-Term AMCV	0.0001
2,2,4-Trimethylpentane	540-84-1	10	6	0.1590	0.0693	380	TCEQ Long-Term AMCV	0.0002
2,3-Dimethylbutane	79-29-8	10	5	0.3135	0.088	190	TCEQ Long-Term AMCV	0.0005
2,3-Dimethylpentane	565-59-3	10	4	0.1862	0.0503	2200	TCEQ Long-Term AMCV	0.0000
2,3,4-Trimethylpentane	565-75-3	10	1	0.0713	0.0269	380	TCEQ Long-Term AMCV	0.0001
2,4-Dimethylpentane	108-08-7	10	6	0.2500	0.0868	2200	TCEQ Long-Term AMCV	0.0000
3-Ethyltoluene	620-14-4	10	2	0.1705	0.0584	25	TCEQ Long-Term AMCV	0.0023
3-Methylheptane	589-81-1	10	4	0.1300	0.0848	380	TCEQ Long-Term AMCV	0.0002
3-Methylhexane	589-34-4	10	5	0.4185	0.1403	2200	TCEQ Long-Term AMCV	0.0001
3-Methylpentane	96-14-0	10	7	0.7203	0.1859	190	TCEQ Long-Term AMCV	0.0010
4-Ethyltoluene	622-96-8	10	2	0.1140	0.0403	25	TCEQ Long-Term AMCV	0.0016
Acetylene	74-86-2	10	9	1.1820	0.6967	2500	TCEQ Long-Term AMCV	0.0003
Benzene	71-43-2	10	9	0.5000	0.249	3	ATSDR Chronic MRL	0.0830
Butane	106-97-8	10	9	4.2000	2.0074	10000	TCEQ Long-Term AMCV	0.0002
Carbon disulfide	75-15-0	10	2	0.2920	0.1113	225	EPA Inhalation RfCi	0.0005
Cis-2-Butene	590-18-1	10	1	0.1847	0.0272	700	TCEQ Long-Term AMCV	0.0000
Cis-2-Pentene	627-20-3	10	1	0.0794	0.0265	560	TCEQ Long-Term AMCV	0.0000
Cyclohexane	110-82-7	10	8	0.2650	0.1626	1,743	EPA Inhalation RfCi	0.0001
Cyclopentane	287-92-3	10	5	0.2066	0.0849	590	TCEQ Long-Term AMCV	0.0001
Decane	124-18-5	10	4	0.1173	0.0624	190	TCEQ Long-Term AMCV	0.0003
Dodecane	112-40-3	10	4	0.2646	0.1037	3.8	CDPHE Chronic	0.0273
Ethane	74-84-0	10	9	15.3000	7.15	NA	NA	
Ethylbenzene	100-41-4	10	5	0.1420	0.0821	230	EPA Inhalation RfCi	0.0004
Ethylene	74-85-1	10	9	1.9000	1.187	5300	TCEQ Long-Term AMCV	0.0002
Heptane	142-82-5	10	9	0.2980	0.1557	98	EPA Inhalation RfCi	0.0016
Hexane	110-54-3	10	9	0.7220	0.4868	199	EPA Inhalation RfCi	0.0025
Isobutane	75-28-5	10	9	1.3800	0.7329	10000	TCEQ Long-Term AMCV	0.0001
Isopentane	78-78-4	10	9	3.4322	1.2207	8100	TCEQ Long-Term AMCV	0.0002
Isoprene	78-79-5	10	2	0.2941	0.0276	140	TCEQ Long-Term AMCV	0.0002
Isopropylbenzene	98-82-8	10	1	0.0952	0.0253	81	EPA Inhalation RfCi	0.0003
m,p-Xylenes	108-38-3..	10	9	0.4240	0.2138	23	EPA RSL Non-Cancer	0.0093
Methylcyclohexane	108-87-2	10	5	0.2669	0.0983	400	TCEQ Long-Term AMCV	0.0002
Methylcyclopentane	96-37-7	10	3	0.5154	0.1741	75	TCEQ Long-Term AMCV	0.0023
n-Octane	111-65-9	10	5	0.1360	0.0657	380	TCEQ Long-Term AMCV	0.0002
Naphthalene	91-20-3	10	1	0.0797	0.0285	0.57	EPA Inhalation RfCi	0.0498
Nonane	111-84-2	10	3	0.1161	0.0509	3.8	EPA Inhalation RfCi	0.0134
o-Xylene	95-47-6	10	6	0.1730	0.0809	23	EPA RSL Non-Cancer	0.0035
Pentane	109-66-0	10	9	2.3448	0.8434	338	EPA Inhalation RfCi	0.0025
Propane	74-98-6	10	9	8.8000	4.2504	NA	NA	
Propylbenzene	103-65-1	10	2	0.1100	0.0396	203	EPA Inhalation RfCi	0.0002
Propylene	115-07-1	10	9	0.4800	0.3005	1,801	EPA RSL Non-Cancer	0.0002
Tetrachloroethene	127-18-4	10	3	0.1130	0.0482	5.9	EPA Inhalation RfCi	0.0082
Toluene	108-88-3	10	9	3.6300	0.5005	1,327	EPA Inhalation RfCi	0.0004
Trans-2-Butene	624-64-6	10	1	0.1724	0.0268	700	TCEQ Long-Term AMCV	0.0000
Trans-2-Pentene	646-04-8	10	1	0.1049	0.028	560	TCEQ Long-Term AMCV	0.0001
Undecane	1120-21-4	10	6	0.1504	0.0857	55	TCEQ Long-Term AMCV	0.0016
							Hazard Index	0.3178

All results presented in parts per billion by volume (ppbv).
NA= Health reference level not available.
Results averaged using EPA time-weighted average (TWA) equation (see methods).
Laboratory non-detections are reported as less than ("<") the method detection limit (MDL) as maximum detection and 1/2 MDL in the time-weighted average calculation.

Summa Canister Data Summary and Risk Assessment
BFD- Brighton | Q3 2021 - Q1 2023

Compound Name	Cas No.	# Samples	# Detections	Maximum Detections	Time-weighted Average (ppb)	Health Reference Level (ppb)	Screening Value Source	Hazard Quotients
1-Butene	106-98-9	10	4	0.2320	0.0728	2300	TCEQ Long-Term AMCV	0.0000
1-Hexene	592-41-6	10	1	0.0869	0.0269	50	TCEQ Long-Term AMCV	0.0005
1-Pentene	109-67-1	10	1	0.1670	0.0272	560	TCEQ Long-Term AMCV	0.0000
1,2,3-Trimethylbenzene	526-73-8	10	3	0.1580	0.0402	12	EPA Inhalation RfCi	0.0033
1,2,4-Trimethylbenzene	95-63-6	10	5	0.1140	0.0261	12	EPA Inhalation RfCi	0.0021
1,3-Butadiene	106-99-0	10	3	0.1700	0.0519	0.95	EPA RSL Non-Cancer	0.0547
1,3-Diethylbenzene	141-93-5	10	0	< 0.0628	0.0263	45	TCEQ Long-Term AMCV	0.0006
1,3,5-Trimethylbenzene	108-67-8	10	2	0.0888	0.0368	12	EPA Inhalation RfCi	0.0030
1,4-Diethylbenzene	105-05-5	10	3	0.0967	0.0484	45	TCEQ Long-Term AMCV	0.0011
2-Ethyltoluene	611-14-3	10	0	< 0.0628	0.0266	25	TCEQ Long-Term AMCV	0.0011
2-Methylheptane	592-27-8	10	1	0.0733	0.027	380	TCEQ Long-Term AMCV	0.0001
2-Methylhexane	591-76-4	10	2	0.1690	0.0376	2200	TCEQ Long-Term AMCV	0.0000
2-Methylpentane	107-83-5	10	5	0.6370	0.1609	190	TCEQ Long-Term AMCV	0.0008
2,2-Dimethylbutane	75-83-2	10	1	0.0923	0.0269	190	TCEQ Long-Term AMCV	0.0001
2,2,4-Trimethylpentane	540-84-1	10	5	0.1310	0.0361	380	TCEQ Long-Term AMCV	0.0001
2,3-Dimethylbutane	79-29-8	10	4	0.1540	0.0442	190	TCEQ Long-Term AMCV	0.0002
2,3-Dimethylpentane	565-59-3	10	4	0.1800	0.0446	2200	TCEQ Long-Term AMCV	0.0000
2,3,4-Trimethylpentane	565-75-3	10	0	< 0.0628	0.0269	380	TCEQ Long-Term AMCV	0.0001
2,4-Dimethylpentane	108-08-7	10	5	0.3270	0.0764	2200	TCEQ Long-Term AMCV	0.0000
3-Ethyltoluene	620-14-4	10	1	0.0998	0.0267	25	TCEQ Long-Term AMCV	0.0011
3-Methylheptane	589-81-1	10	3	0.1500	0.0703	380	TCEQ Long-Term AMCV	0.0002
3-Methylhexane	589-34-4	10	5	0.2500	0.1156	2200	TCEQ Long-Term AMCV	0.0001
3-Methylpentane	96-14-0	10	7	0.5020	0.1863	190	TCEQ Long-Term AMCV	0.0010
4-Ethyltoluene	622-96-8	10	1	0.0902	0.0282	25	TCEQ Long-Term AMCV	0.0011
Acetylene	74-86-2	10	8	2.4300	0.4515	2500	TCEQ Long-Term AMCV	0.0002
Benzene	71-43-2	10	9	0.3980	0.1851	3	ATSDR Chronic MRL	0.0617
Butane	106-97-8	10	8	5.7300	2.6711	10000	TCEQ Long-Term AMCV	0.0003
Carbon disulfide	75-15-0	10	5	0.1870	0.0896	225	EPA Inhalation RfCi	0.0004
Cis-2-Butene	590-18-1	10	1	0.0676	0.027	700	TCEQ Long-Term AMCV	0.0000
Cis-2-Pentene	627-20-3	10	0	< 0.0628	0.0264	560	TCEQ Long-Term AMCV	0.0000
Cyclohexane	110-82-7	10	9	0.3050	0.1309	1,743	EPA Inhalation RfCi	0.0001
Cyclopentane	287-92-3	10	4	0.3230	0.0817	590	TCEQ Long-Term AMCV	0.0001
Decane	124-18-5	10	5	0.4540	0.0658	190	TCEQ Long-Term AMCV	0.0003
Dodecane	112-40-3	10	2	0.2466	0.0976	3.8	CDPHE Chronic	0.0257
Ethane	74-84-0	10	9	22.6000	8.4752	NA	NA	
Ethylbenzene	100-41-4	10	6	0.1160	0.0562	230	EPA Inhalation RfCi	0.0002
Ethylene	74-85-1	10	9	3.2000	0.7072	5300	TCEQ Long-Term AMCV	0.0001
Heptane	142-82-5	10	9	0.2810	0.1347	98	EPA Inhalation RfCi	0.0014
Hexane	110-54-3	10	9	0.6860	0.3584	199	EPA Inhalation RfCi	0.0018
Isobutane	75-28-5	10	8	2.3500	0.9398	10000	TCEQ Long-Term AMCV	0.0001
Isopentane	78-78-4	10	9	2.5300	1.0616	8100	TCEQ Long-Term AMCV	0.0001
Isoprene	78-79-5	10	1	0.0945	0.0271	140	TCEQ Long-Term AMCV	0.0002
Isopropylbenzene	98-82-8	10	1	0.0860	0.0254	81	EPA Inhalation RfCi	0.0003
m,p-Xylenes	108-38-3..	10	8	0.2780	0.1391	23	EPA RSL Non-Cancer	0.0060
Methylcyclohexane	108-87-2	10	3	0.1760	0.0715	400	TCEQ Long-Term AMCV	0.0002
Methylcyclopentane	96-37-7	10	5	0.3830	0.1088	75	TCEQ Long-Term AMCV	0.0015
n-Octane	111-65-9	10	6	0.1210	0.0676	380	TCEQ Long-Term AMCV	0.0002
Naphthalene	91-20-3	10	1	0.0698	0.0284	0.57	EPA Inhalation RfCi	0.0496
Nonane	111-84-2	10	5	0.1300	0.0547	3.8	EPA Inhalation RfCi	0.0143
o-Xylene	95-47-6	10	6	0.1420	0.0712	23	EPA RSL Non-Cancer	0.0031
Pentane	109-66-0	10	9	2.2200	0.9117	338	EPA Inhalation RfCi	0.0027
Propane	74-98-6	10	9	10.3000	5.3331	NA	NA	
Propylbenzene	103-65-1	10	1	0.0986	0.0256	203	EPA Inhalation RfCi	0.0001
Propylene	115-07-1	10	9	0.6530	0.1596	1,801	EPA RSL Non-Cancer	0.0001
Tetrachloroethene	127-18-4	10	3	0.1140	0.0402	5.9	EPA Inhalation RfCi	0.0068
Toluene	108-88-3	10	9	0.5860	0.3074	1,327	EPA Inhalation RfCi	0.0002
Trans-2-Butene	624-64-6	10	1	0.1150	0.0268	700	TCEQ Long-Term AMCV	0.0000
Trans-2-Pentene	646-04-8	10	1	0.2320	0.0282	560	TCEQ Long-Term AMCV	0.0001
Undecane	1120-21-4	10	7	0.1444	0.0837	55	TCEQ Long-Term AMCV	0.0015
							Hazard Index	0.2511

All results presented in parts per billion by volume (ppbv).
NA= Health reference level not available.
Results averaged using EPA time-weighted average (TWA) equation (see methods).
Laboratory non-detections are reported as less than ("<") the method detection limit (MDL) as maximum detection and 1/2 MDL in the time-weighted average calculation.

Summa Canister Data Summary and Risk Assessment
CAMP- Denver | Q3 2021 - Q1 2023

Compound Name	Cas No.	# Samples	# Detections	Maximum Detections	Time-weighted Average (ppb)	Health Reference Level (ppb)	Screening Value Source	Hazard Quotients
1-Butene	106-98-9	10	6	2.5000	0.8746	2300	TCEQ Long-Term AMCV	0.0004
1-Hexene	592-41-6	10	0	< 0.0632	0.027	50	TCEQ Long-Term AMCV	0.0005
1-Pentene	109-67-1	10	1	0.0632	0.0364	560	TCEQ Long-Term AMCV	0.0001
1,2,3-Trimethylbenzene	526-73-8	10	4	0.1560	0.0382	12	EPA Inhalation RfCi	0.0031
1,2,4-Trimethylbenzene	95-63-6	10	6	0.1950	0.0763	12	EPA Inhalation RfCi	0.0063
1,3-Butadiene	106-99-0	10	6	0.2090	0.0866	0.95	EPA RSL Non-Cancer	0.0912
1,3-Diethylbenzene	141-93-5	10	0	< 0.0632	0.0265	45	TCEQ Long-Term AMCV	0.0006
1,3,5-Trimethylbenzene	108-67-8	10	2	0.1410	0.0423	12	EPA Inhalation RfCi	0.0035
1,4-Diethylbenzene	105-05-5	10	1	0.0696	0.0271	45	TCEQ Long-Term AMCV	0.0006
2-Ethyltoluene	611-14-3	10	0	< 0.0632	0.0268	25	TCEQ Long-Term AMCV	0.0011
2-Methylheptane	592-27-8	10	2	0.0680	0.0394	380	TCEQ Long-Term AMCV	0.0001
2-Methylhexane	591-76-4	10	3	0.2080	0.0606	2200	TCEQ Long-Term AMCV	0.0000
2-Methylpentane	107-83-5	10	8	0.6360	0.248	190	TCEQ Long-Term AMCV	0.0013
2,2-Dimethylbutane	75-83-2	10	2	0.0753	0.0273	190	TCEQ Long-Term AMCV	0.0001
2,2,4-Trimethylpentane	540-84-1	10	6	0.2270	0.0752	380	TCEQ Long-Term AMCV	0.0002
2,3-Dimethylbutane	79-29-8	10	4	0.2883	0.1387	190	TCEQ Long-Term AMCV	0.0007
2,3-Dimethylpentane	565-59-3	10	5	0.2031	0.0968	2200	TCEQ Long-Term AMCV	0.0000
2,3,4-Trimethylpentane	565-75-3	10	0	< 0.0632	0.0271	380	TCEQ Long-Term AMCV	0.0001
2,4-Dimethylpentane	108-08-7	10	7	0.4390	0.1331	2200	TCEQ Long-Term AMCV	0.0001
3-Ethyltoluene	620-14-4	10	5	0.0794	0.0567	25	TCEQ Long-Term AMCV	0.0023
3-Methylheptane	589-81-1	10	2	0.2200	0.0934	380	TCEQ Long-Term AMCV	0.0002
3-Methylhexane	589-34-4	10	5	0.2800	0.1687	2200	TCEQ Long-Term AMCV	0.0001
3-Methylpentane	96-14-0	10	6	0.5390	0.1463	190	TCEQ Long-Term AMCV	0.0008
4-Ethyltoluene	622-96-8	10	2	0.1330	0.0407	25	TCEQ Long-Term AMCV	0.0016
Acetylene	74-86-2	10	9	1.6000	0.9187	2500	TCEQ Long-Term AMCV	0.0004
Benzene	71-43-2	10	9	0.8420	0.4517	3	ATSDR Chronic MRL	0.1506
Butane	106-97-8	10	8	5.2900	2.0172	10000	TCEQ Long-Term AMCV	0.0002
Carbon disulfide	75-15-0	10	6	0.5620	0.0692	225	EPA Inhalation RfCi	0.0003
Cis-2-Butene	590-18-1	10	1	0.0815	0.0272	700	TCEQ Long-Term AMCV	0.0000
Cis-2-Pentene	627-20-3	10	0	< 0.0632	0.0266	560	TCEQ Long-Term AMCV	0.0000
Cyclohexane	110-82-7	10	8	0.3760	0.1817	1,743	EPA Inhalation RfCi	0.0001
Cyclopentane	287-92-3	10	5	0.2060	0.0607	590	TCEQ Long-Term AMCV	0.0001
Decane	124-18-5	10	2	0.0903	0.0422	190	TCEQ Long-Term AMCV	0.0002
Dodecane	112-40-3	10	4	0.0968	0.0587	3.8	CDPHE Chronic	0.0154
Ethane	74-84-0	10	8	19.2000	8.9558	NA	NA	
Ethylbenzene	100-41-4	10	6	0.2260	0.0874	230	EPA Inhalation RfCi	0.0004
Ethylene	74-85-1	10	9	3.6433	2.6526	5300	TCEQ Long-Term AMCV	0.0005
Heptane	142-82-5	10	6	0.4160	0.1725	98	EPA Inhalation RfCi	0.0018
Hexane	110-54-3	10	9	1.1600	0.4344	199	EPA Inhalation RfCi	0.0022
Isobutane	75-28-5	10	8	1.6200	0.8645	10000	TCEQ Long-Term AMCV	0.0001
Isopentane	78-78-4	10	9	2.3700	1.3631	8100	TCEQ Long-Term AMCV	0.0002
Isoprene	78-79-5	10	1	0.0861	0.0273	140	TCEQ Long-Term AMCV	0.0002
Isopropylbenzene	98-82-8	10	2	0.1160	0.036	81	EPA Inhalation RfCi	0.0004
m,p-Xylenes	108-38-3..	10	9	0.4700	0.2154	23	EPA RSL Non-Cancer	0.0094
Methylcyclohexane	108-87-2	10	5	0.2290	0.0809	400	TCEQ Long-Term AMCV	0.0002
Methylcyclopentane	96-37-7	10	5	0.3710	0.1404	75	TCEQ Long-Term AMCV	0.0019
n-Octane	111-65-9	10	6	0.1900	0.0745	380	TCEQ Long-Term AMCV	0.0002
Naphthalene	91-20-3	10	3	0.1010	0.0439	0.57	EPA Inhalation RfCi	0.0767
Nonane	111-84-2	10	3	0.1060	0.0449	3.8	EPA Inhalation RfCi	0.0118
o-Xylene	95-47-6	10	6	0.2040	0.0865	23	EPA RSL Non-Cancer	0.0038
Pentane	109-66-0	10	9	2.0200	1.0571	338	EPA Inhalation RfCi	0.0031
Propane	74-98-6	10	9	9.7300	3.6057	NA	NA	
Propylbenzene	103-65-1	10	2	0.1410	0.0392	203	EPA Inhalation RfCi	0.0002
Propylene	115-07-1	10	9	0.5556	0.4081	1,801	EPA RSL Non-Cancer	0.0002
Tetrachloroethene	127-18-4	10	2	0.1540	0.0428	5.9	EPA Inhalation RfCi	0.0073
Toluene	108-88-3	10	9	1.0700	0.5215	1,327	EPA Inhalation RfCi	0.0004
Trans-2-Butene	624-64-6	10	0	< 0.0632	0.0268	700	TCEQ Long-Term AMCV	0.0000
Trans-2-Pentene	646-04-8	10	1	0.2490	0.0286	560	TCEQ Long-Term AMCV	0.0001
Undecane	1120-21-4	10	5	0.1022	0.0475	55	TCEQ Long-Term AMCV	0.0009
							Hazard Index	0.4042

All results presented in parts per billion by volume (ppbv).
NA= Health reference level not available.
Results averaged using EPA time-weighted average (TWA) equation (see methods).
Laboratory non-detections are reported as less than ("<") the method detection limit (MDL) as maximum detection and 1/2 MDL in the time-weighted average calculation.

Summa Canister Data Summary and Risk Assessment
JUNC- E470/I25 | Q3 2021 - Q1 2023

Compound Name	Cas No.	# Samples	# Detections	Maximum Detections	Time-weighted Average (ppb)	Health Reference Level (ppb)	Screening Value Source	Hazard Quotients
1-Butene	106-98-9	9	4	0.1020	0.0313	2300	TCEQ Long-Term AMCV	0.0000
1-Hexene	592-41-6	9	1	0.0733	0.0308	50	TCEQ Long-Term AMCV	0.0006
1-Pentene	109-67-1	9	2	0.0680	0.0309	560	TCEQ Long-Term AMCV	0.0001
1,2,3-Trimethylbenzene	526-73-8	9	2	0.2150	0.0506	12	EPA Inhalation RfCi	0.0041
1,2,4-Trimethylbenzene	95-63-6	9	4	0.1310	0.0589	12	EPA Inhalation RfCi	0.0048
1,3-Butadiene	106-99-0	9	5	0.1260	0.0623	0.95	EPA RSL Non-Cancer	0.0656
1,3-Diethylbenzene	141-93-5	9	0	< 0.0627	0.0307	45	TCEQ Long-Term AMCV	0.0007
1,3,5-Trimethylbenzene	108-67-8	9	2	0.1100	0.0512	12	EPA Inhalation RfCi	0.0042
1,4-Diethylbenzene	105-05-5	9	2	0.1300	0.0311	45	TCEQ Long-Term AMCV	0.0007
2-Ethyltoluene	611-14-3	9	0	< 0.0627	0.0307	25	TCEQ Long-Term AMCV	0.0012
2-Methylheptane	592-27-8	9	2	0.2600	0.0315	380	TCEQ Long-Term AMCV	0.0001
2-Methylhexane	591-76-4	9	2	0.1870	0.0312	2200	TCEQ Long-Term AMCV	0.0000
2-Methylpentane	107-83-5	9	5	0.6160	0.1079	190	TCEQ Long-Term AMCV	0.0006
2,2-Dimethylbutane	75-83-2	9	1	0.3880	0.0317	190	TCEQ Long-Term AMCV	0.0002
2,2,4-Trimethylpentane	540-84-1	9	5	0.1610	0.0518	380	TCEQ Long-Term AMCV	0.0001
2,3-Dimethylbutane	79-29-8	9	4	0.2230	0.1257	190	TCEQ Long-Term AMCV	0.0007
2,3-Dimethylpentane	565-59-3	9	5	0.0917	0.0495	2200	TCEQ Long-Term AMCV	0.0000
2,3,4-Trimethylpentane	565-75-3	9	1	0.1500	0.0311	380	TCEQ Long-Term AMCV	0.0001
2,4-Dimethylpentane	108-08-7	9	6	0.2690	0.095	2200	TCEQ Long-Term AMCV	0.0000
3-Ethyltoluene	620-14-4	9	2	0.0944	0.0467	25	TCEQ Long-Term AMCV	0.0019
3-Methylheptane	589-81-1	9	3	0.2400	0.0533	380	TCEQ Long-Term AMCV	0.0001
3-Methylhexane	589-34-4	9	5	1.5100	0.0848	2200	TCEQ Long-Term AMCV	0.0000
3-Methylpentane	96-14-0	9	7	0.9050	0.1619	190	TCEQ Long-Term AMCV	0.0009
4-Ethyltoluene	622-96-8	9	2	0.1030	0.0474	25	TCEQ Long-Term AMCV	0.0019
Acetylene	74-86-2	9	8	1.2700	0.3136	2500	TCEQ Long-Term AMCV	0.0001
Benzene	71-43-2	9	8	0.5250	0.1522	3	ATSDR Chronic MRL	0.0507
Butane	106-97-8	9	7	4.7000	1.6797	10000	TCEQ Long-Term AMCV	0.0002
Carbon disulfide	75-15-0	9	4	0.2300	0.1111	225	EPA Inhalation RfCi	0.0005
Cis-2-Butene	590-18-1	9	0	< 0.0627	0.0307	700	TCEQ Long-Term AMCV	0.0000
Cis-2-Pentene	627-20-3	9	0	< 0.0627	0.0307	560	TCEQ Long-Term AMCV	0.0001
Cyclohexane	110-82-7	9	8	0.4160	0.1215	1,743	EPA Inhalation RfCi	0.0001
Cyclopentane	287-92-3	9	3	0.2130	0.0318	590	TCEQ Long-Term AMCV	0.0001
Decane	124-18-5	9	7	0.8100	0.0793	190	TCEQ Long-Term AMCV	0.0004
Dodecane	112-40-3	9	4	0.2395	0.1514	3.8	CDPHE Chronic	0.0398
Ethane	74-84-0	9	8	17.6000	6.3923	NA	NA	
Ethylbenzene	100-41-4	9	5	0.1440	0.0683	230	EPA Inhalation RfCi	0.0003
Ethylene	74-85-1	9	8	1.9500	0.5756	5300	TCEQ Long-Term AMCV	0.0001
Heptane	142-82-5	9	7	0.3500	0.1343	98	EPA Inhalation RfCi	0.0014
Hexane	110-54-3	9	8	0.8230	0.2857	199	EPA Inhalation RfCi	0.0014
Isobutane	75-28-5	9	8	1.8900	0.7044	10000	TCEQ Long-Term AMCV	0.0001
Isopentane	78-78-4	9	8	2.4400	0.8719	8100	TCEQ Long-Term AMCV	0.0001
Isoprene	78-79-5	9	2	0.1125	0.031	140	TCEQ Long-Term AMCV	0.0002
Isopropylbenzene	98-82-8	9	2	0.0938	0.031	81	EPA Inhalation RfCi	0.0004
m,p-Xylenes	108-38-3..	9	7	0.3210	0.1637	23	EPA RSL Non-Cancer	0.0071
Methylcyclohexane	108-87-2	9	4	0.1890	0.0596	400	TCEQ Long-Term AMCV	0.0001
Methylcyclopentane	96-37-7	9	4	0.4060	0.0803	75	TCEQ Long-Term AMCV	0.0011
n-Octane	111-65-9	9	5	0.3700	0.0573	380	TCEQ Long-Term AMCV	0.0002
Naphthalene	91-20-3	9	1	0.0767	0.0308	0.57	EPA Inhalation RfCi	0.0538
Nonane	111-84-2	9	4	1.3000	0.0348	3.8	EPA Inhalation RfCi	0.0091
o-Xylene	95-47-6	9	5	0.1470	0.0855	23	EPA RSL Non-Cancer	0.0037
Pentane	109-66-0	9	8	3.3700	0.6639	338	EPA Inhalation RfCi	0.0020
Propane	74-98-6	9	8	10.0000	3.7156	NA	NA	
Propylbenzene	103-65-1	9	2	0.1220	0.0498	203	EPA Inhalation RfCi	0.0002
Propylene	115-07-1	9	8	0.4650	0.1451	1,801	EPA RSL Non-Cancer	0.0001
Tetrachloroethene	127-18-4	9	4	0.1130	0.0477	5.9	EPA Inhalation RfCi	0.0081
Toluene	108-88-3	9	8	0.7640	0.3244	1,327	EPA Inhalation RfCi	0.0002
Trans-2-Butene	624-64-6	9	0	< 0.0627	0.0307	700	TCEQ Long-Term AMCV	0.0000
Trans-2-Pentene	646-04-8	9	1	0.3070	0.0315	560	TCEQ Long-Term AMCV	0.0001
Undecane	1120-21-4	9	6	0.1357	0.0959	55	TCEQ Long-Term AMCV	0.0017
							Hazard Index	0.2723

All results presented in parts per billion by volume (ppbv).
NA= Health reference level not available.
Results averaged using EPA time-weighted average (TWA) equation (see methods).
Laboratory non-detections are reported as less than ("<") the method detection limit (MDL) as maximum detection and 1/2 MDL in the time-weighted average calculation.

Appendix C

Chronic Hazard Quotients for Individual Chemicals from Mobile Monitoring Van Data by Location

Mobile Sampling Van Data Summary and Risk Assessment
Adams City Neighborhood | Q3 2021 - Q1 2023

Analyte	Cas No	Count of 1-second Concentrations (#)	Count of 1-hr Rolling Averages Derived (#)	Maximum 1-hr Rolling Average (ppbv)	Average 1-hr Rolling Average (ppbv)	Health Reference Level (ppbv)	Screening Value Source	Hazard Quotient
1,3 BUTADIENE	106-99-0	50,742	27,421	0.07	0.04	0.95	EPA RSL Non-Cancer	0.0401
ACETYLENE	74-86-2	50,742	27,421	0.47	0.16	2500	TCEQ Long-Term AMCV	0.0001
BENZENE	71-43-2	50,742	27,421	0.48	0.25	3	ATSDR Chronic MRL	0.0826
BUTANES*	75-28-5	50,742	27,421	3.39	1.71	10000	TCEQ Long-Term AMCV	0.0002
BUTENES*	590-18-1	50,742	27,421	2.98	1.37	700	TCEQ Long-Term AMCV	0.0020
CARBON DISULFIDE	75-15-0	50,742	27,421	0.01	0.01	225	EPA Inhalation RfCi	0.0000
CYCLOPENTANE	287-92-3	50,742	27,421	2.88	1.56	590	TCEQ Long-Term AMCV	0.0027
DECANES	124-18-5	50,742	27,421	0.27	0.06	190	TCEQ Long-Term AMCV	0.0003
DIETHYLBENZENES*	141-93-5	50,742	27,421	0.13	0.05	45	TCEQ Long-Term AMCV	0.0011
DIMETHYLCYCLOHEXANES*	638-04-0	50,742	27,421	0.14	0.07	400	CDPHE	0.0002
DODECANES	112-40-3	50,742	27,421	0.00	0.00	3.8	CDPHE	0.0002
ETHYLENE	74-85-1	50,742	27,421	11.29	6.26	5300	TCEQ Long-Term AMCV	0.0012
HEPTANES*	142-82-5	50,742	27,421	0.09	0.05	98	EPA Inhalation RfCi	0.0005
HEXANES*	110-54-3	50,742	27,421	0.19	0.09	199	EPA Inhalation RfCi	0.0005
HEXENES*	592-41-6	50,742	27,421	1.40	0.55	50	TCEQ Long-Term AMCV	0.0110
HYDROGEN CYANIDE	74-90-8	50,742	27,421	0.30	0.17	0.75	EPA RSL Non-Cancer	0.2277
HYDROGEN SULFIDE	7783-06-4	50,742	27,421	0.27	0.16	1.4	EPA Inhalation RfCi	0.1104
ISOPRENE	78-79-5	50,742	27,421	0.94	0.31	140	TCEQ Long-Term AMCV	0.0022
METHANOL	67-56-1	50,742	27,421	9.58	5.58	15261	EPA Inhalation RfCi	0.0004
METHYLCYCLOHEXANE	108-87-2	50,742	27,421	0.10	0.05	400	TCEQ Long-Term AMCV	0.0001
NONANES	111-84-2	50,742	27,421	0.09	0.05	3.8	EPA Inhalation RfCi	0.0124
OCTANES*	111-65-9	50,742	27,421	0.09	0.05	380	TCEQ Long-Term AMCV	0.0001
PENTANES*	109-66-0	50,742	27,421	0.25	0.12	339	EPA Inhalation RfCi	0.0003
PROPYLENE	115-07-1	50,742	27,421	0.38	0.23	1801	EPA RSL Non-Cancer	0.0001
STYRENE	100-42-5	50,742	27,421	0.23	0.09	235	EPA Inhalation RfCi	0.0004
TETRACHLOROETHYLENE	127-18-4	50,742	27,421	0.04	0.01	5.9	EPA Inhalation RfCi	0.0025
TOLUENE	108-88-3	50,742	27,421	1.19	0.66	1327	EPA Inhalation RfCi	0.0005
TRIMETHYLBENZENES*	622-96-8	50,742	27,421	0.29	0.18	25	TCEQ Long-Term AMCV	0.0073
UNDECANES	1120-21-4	50,742	27,421	0.06	0.03	55	TCEQ Long-Term AMCV	0.0005
XYLENES*	1330-20-7	50,742	27,421	1.52	0.89	23	EPA Inhalation RfCi	0.0388
							Hazard Index	0.5462

*For analyte isomer groups which were unable to be differentiated, the lowest health reference value of the isomer group was selected for use in this assessment.

Mobile Sampling Van Data Summary and Risk Assessment
Dupont Neighborhood | Q3 2021 - Q1 2023

Analyte	Cas No	Count of 1-second Concentrations (#)	Count of 1-hr Rolling Averages Derived (#)	Maximum 1-hr Rolling Average (ppbv)	Average 1-hr Rolling Average (ppbv)	Health Reference Level (ppbv)	Screening Value Source	Hazard Quotient
1,3 BUTADIENE	106-99-0	81,586	54,105	0.08	0.04	0.95	EPA RSL Non-Cancer	0.0393
ACETYLENE	74-86-2	81,586	54,105	0.26	0.11	2500	TCEQ Long-Term AMCV	0.0000
BENZENE	71-43-2	81,586	54,105	0.43	0.26	3	ATSDR Chronic MRL	0.0880
BUTANES*	75-28-5	81,586	54,105	4.75	3.47	10000	TCEQ Long-Term AMCV	0.0003
BUTENES*	590-18-1	81,586	54,105	3.25	1.83	700	TCEQ Long-Term AMCV	0.0026
CARBON DISULFIDE	75-15-0	81,586	54,105	0.05	0.01	225	EPA Inhalation RfCi	0.0000
CYCLOPENTANE	287-92-3	81,586	54,105	2.96	1.42	590	TCEQ Long-Term AMCV	0.0024
DECANES	124-18-5	81,586	54,105	0.20	0.06	190	TCEQ Long-Term AMCV	0.0003
DIETHYLBENZENES*	141-93-5	81,586	54,105	0.08	0.02	45	TCEQ Long-Term AMCV	0.0005
DIMETHYLCYCLOHEXANES*	638-04-0	81,586	54,105	0.06	0.02	400	CDPHE	0.0000
DODECANES	112-40-3	81,586	54,105	0.04	0.00	3.8	CDPHE	0.0001
ETHYLENE	74-85-1	81,586	54,105	9.39	6.59	5300	TCEQ Long-Term AMCV	0.0012
HEPTANES*	142-82-5	81,586	54,105	0.12	0.05	98	EPA Inhalation RfCi	0.0006
HEXANES*	110-54-3	81,586	54,105	0.61	0.16	199	EPA Inhalation RfCi	0.0008
HEXENES*	592-41-6	81,586	54,105	1.86	0.83	50	TCEQ Long-Term AMCV	0.0167
HYDROGEN CYANIDE	74-90-8	81,586	54,105	0.79	0.22	0.75	EPA RSL Non-Cancer	0.2913
HYDROGEN SULFIDE	7783-06-4	81,586	54,105	0.36	0.14	1.4	EPA Inhalation RfCi	0.0981
ISOPRENE	78-79-5	81,586	54,105	0.72	0.21	140	TCEQ Long-Term AMCV	0.0015
METHANOL	67-56-1	81,586	54,105	11.51	4.26	15261	EPA Inhalation RfCi	0.0003
METHYLCYCLOHEXANE	108-87-2	81,586	54,105	0.09	0.04	400	TCEQ Long-Term AMCV	0.0001
NONANES	111-84-2	81,586	54,105	0.07	0.02	3.8	EPA Inhalation RfCi	0.0054
OCTANES*	111-65-9	81,586	54,105	0.08	0.04	380	TCEQ Long-Term AMCV	0.0001
PENTANES*	109-66-0	81,586	54,105	1.54	0.95	339	EPA Inhalation RfCi	0.0028
PROPYLENE	115-07-1	81,586	54,105	0.40	0.16	1801	EPA RSL Non-Cancer	0.0001
STYRENE	100-42-5	81,586	54,105	0.17	0.05	235	EPA Inhalation RfCi	0.0002
TETRACHLOROETHYLENE	127-18-4	81,586	54,105	0.03	0.01	5.9	EPA Inhalation RfCi	0.0013
TOLUENE	108-88-3	81,586	54,105	1.47	0.68	1327	EPA Inhalation RfCi	0.0005
TRIMETHYLBENZENES*	622-96-8	81,586	54,105	0.32	0.11	25	TCEQ Long-Term AMCV	0.0045
UNDECANES	1120-21-4	81,586	54,105	0.08	0.02	55	TCEQ Long-Term AMCV	0.0004
XYLENES*	1330-20-7	81,586	54,105	0.89	0.40	23	EPA Inhalation RfCi	0.0174
							Hazard Index	0.5771

*For analyte isomer groups which were unable to be differentiated, the lowest health reference value of the isomer group was selected for use in this assessment.

Mobile Sampling Van Data Summary and Risk Assessment
Elyria-Swansea Neighborhood | Q3 2021 - Q1 2023

Analyte	Cas No	Count of 1-second Concentrations (#)	Count of 1-hr Rolling Averages Derived (#)	Maximum 1-hr Rolling Average (ppbv)	Average 1-hr Rolling Average (ppbv)	Health Reference Level (ppbv)	Screening Value Source	Hazard Quotient
1,3 BUTADIENE	106-99-0	49,759	25,422	0.11	0.06	0.95	EPA RSL Non-Cancer	0.0594
ACETYLENE	74-86-2	49,759	25,422	0.33	0.14	2500	TCEQ Long-Term AMCV	0.0001
BENZENE	71-43-2	49,759	25,422	0.48	0.29	3	ATSDR Chronic MRL	0.0971
BUTANES*	75-28-5	49,759	25,422	4.83	2.77	10000	TCEQ Long-Term AMCV	0.0003
BUTENES*	590-18-1	49,759	25,422	2.91	1.28	700	TCEQ Long-Term AMCV	0.0018
CARBON DISULFIDE	75-15-0	49,759	25,422	0.05	0.01	225	EPA Inhalation RfCi	0.0000
CYCLOPENTANE	287-92-3	49,759	25,422	3.19	1.65	590	TCEQ Long-Term AMCV	0.0028
DECANES	124-18-5	49,759	25,422	0.08	0.04	190	TCEQ Long-Term AMCV	0.0002
DIETHYLBENZENES*	141-93-5	49,759	25,422	0.12	0.05	45	TCEQ Long-Term AMCV	0.0010
DIMETHYLCYCLOHEXANES*	638-04-0	49,759	25,422	0.06	0.03	400	CDPHE	0.0001
DODECANES	112-40-3	49,759	25,422	0.02	0.00	3.8	CDPHE	0.0005
ETHYLENE	74-85-1	49,759	25,422	10.19	7.67	5300	TCEQ Long-Term AMCV	0.0014
HEPTANES*	142-82-5	49,759	25,422	0.10	0.05	98	EPA Inhalation RfCi	0.0005
HEXANES*	110-54-3	49,759	25,422	0.26	0.10	199	EPA Inhalation RfCi	0.0005
HEXENES*	592-41-6	49,759	25,422	2.47	0.93	50	TCEQ Long-Term AMCV	0.0186
HYDROGEN CYANIDE	74-90-8	49,759	25,422	0.41	0.19	0.75	EPA RSL Non-Cancer	0.2542
HYDROGEN SULFIDE	7783-06-4	49,759	25,422	0.39	0.18	1.4	EPA Inhalation RfCi	0.1270
ISOPRENE	78-79-5	49,759	25,422	0.44	0.22	140	TCEQ Long-Term AMCV	0.0016
METHANOL	67-56-1	49,759	25,422	11.62	6.63	15261	EPA Inhalation RfCi	0.0004
METHYLCYCLOHEXANE	108-87-2	49,759	25,422	0.15	0.09	400	TCEQ Long-Term AMCV	0.0002
NONANES	111-84-2	49,759	25,422	0.04	0.01	3.8	EPA Inhalation RfCi	0.0038
OCTANES*	111-65-9	49,759	25,422	0.13	0.04	380	TCEQ Long-Term AMCV	0.0001
PENTANES*	109-66-0	49,759	25,422	0.90	0.21	339	EPA Inhalation RfCi	0.0006
PROPYLENE	115-07-1	49,759	25,422	0.58	0.27	1801	EPA RSL Non-Cancer	0.0001
STYRENE	100-42-5	49,759	25,422	0.11	0.05	235	EPA Inhalation RfCi	0.0002
TETRACHLOROETHYLENE	127-18-4	49,759	25,422	0.14	0.02	5.9	EPA Inhalation RfCi	0.0040
TOLUENE	108-88-3	49,759	25,422	1.85	0.93	1327	EPA Inhalation RfCi	0.0007
TRIMETHYLBENZENES*	622-96-8	49,759	25,422	0.45	0.19	25	TCEQ Long-Term AMCV	0.0075
UNDECANES	1120-21-4	49,759	25,422	0.08	0.02	55	TCEQ Long-Term AMCV	0.0004
XYLENES*	1330-20-7	49,759	25,422	1.98	0.72	23	EPA Inhalation RfCi	0.0315
							Hazard Index	0.6166

*For analyte isomer groups which were unable to be differentiated, the lowest health reference value of the isomer group was selected for use in this assessment.

Mobile Sampling Van Data Summary and Risk Assessment
Globeville Neighborhood | Q3 2021 - Q1 2023

Analyte	Cas No	Count of 1-second Concentrations (#)	Count of 1-hr Rolling Averages Derived (#)	Maximum 1-hr Rolling Average (ppbv)	Average 1-hr Rolling Average (ppbv)	Health Reference Level (ppbv)	Screening Value Source	Hazard Quotient
1,3 BUTADIENE	106-99-0	48,463	24,768	0.11	0.04	0.95	EPA RSL Non-Cancer	0.0469
ACETYLENE	74-86-2	48,463	24,768	0.28	0.13	2500	TCEQ Long-Term AMCV	0.0001
BENZENE	71-43-2	48,463	24,768	0.63	0.29	3	ATSDR Chronic MRL	0.0981
BUTANES*	75-28-5	48,463	24,768	6.63	2.59	10000	TCEQ Long-Term AMCV	0.0003
BUTENES*	590-18-1	48,463	24,768	1.79	1.09	700	TCEQ Long-Term AMCV	0.0016
CARBON DISULFIDE	75-15-0	48,463	24,768	0.05	0.01	225	EPA Inhalation RfCi	0.0001
CYCLOPENTANE	287-92-3	48,463	24,768	1.61	0.97	590	TCEQ Long-Term AMCV	0.0017
DECANES	124-18-5	48,463	24,768	0.15	0.07	190	TCEQ Long-Term AMCV	0.0004
DIETHYLBENZENES*	141-93-5	48,463	24,768	0.14	0.06	45	TCEQ Long-Term AMCV	0.0013
DIMETHYLCYCLOHEXANES*	638-04-0	48,463	24,768	0.05	0.02	400	CDPHE	0.0001
DODECANES	112-40-3	48,463	24,768	0.00	0.00	3.8	CDPHE	0.0002
ETHYLENE	74-85-1	48,463	24,768	11.60	7.39	5300	TCEQ Long-Term AMCV	0.0014
HEPTANES*	142-82-5	48,463	24,768	0.10	0.05	98	EPA Inhalation RfCi	0.0005
HEXANES*	110-54-3	48,463	24,768	0.09	0.05	199	EPA Inhalation RfCi	0.0002
HEXENES*	592-41-6	48,463	24,768	1.35	0.65	50	TCEQ Long-Term AMCV	0.0130
HYDROGEN CYANIDE	74-90-8	48,463	24,768	0.25	0.11	0.75	EPA RSL Non-Cancer	0.1447
HYDROGEN SULFIDE	7783-06-4	48,463	24,768	0.26	0.15	1.4	EPA Inhalation RfCi	0.1064
ISOPRENE	78-79-5	48,463	24,768	0.44	0.26	140	TCEQ Long-Term AMCV	0.0019
METHANOL	67-56-1	48,463	24,768	9.63	6.40	15261	EPA Inhalation RfCi	0.0004
METHYLCYCLOHEXANE	108-87-2	48,463	24,768	0.11	0.06	400	TCEQ Long-Term AMCV	0.0002
NONANES	111-84-2	48,463	24,768	0.04	0.02	3.8	EPA Inhalation RfCi	0.0050
OCTANES*	111-65-9	48,463	24,768	0.08	0.04	380	TCEQ Long-Term AMCV	0.0001
PENTANES*	109-66-0	48,463	24,768	0.27	0.09	339	EPA Inhalation RfCi	0.0003
PROPYLENE	115-07-1	48,463	24,768	0.61	0.36	1801	EPA RSL Non-Cancer	0.0002
STYRENE	100-42-5	48,463	24,768	0.11	0.03	235	EPA Inhalation RfCi	0.0001
TETRACHLOROETHYLENE	127-18-4	48,463	24,768	0.02	0.01	5.9	EPA Inhalation RfCi	0.0016
TOLUENE	108-88-3	48,463	24,768	6.31	1.08	1327	EPA Inhalation RfCi	0.0008
TRIMETHYLBENZENES*	622-96-8	48,463	24,768	0.30	0.08	25	TCEQ Long-Term AMCV	0.0032
UNDECANES	1120-21-4	48,463	24,768	0.06	0.03	55	TCEQ Long-Term AMCV	0.0006
XYLENES*	1330-20-7	48,463	24,768	1.32	0.58	23	EPA Inhalation RfCi	0.0250
							Hazard Index	0.4560

*For analyte isomer groups which were unable to be differentiated, the lowest health reference value of the isomer group was selected for use in this assessment.

Mobile Sampling Van Data Summary and Risk Assessment
Pioneer Park Neighborhood | Q3 2021 - Q1 2023

Analyte	Cas No	Count of 1-second Concentrations (#)	Count of 1-hr Rolling Averages Derived (#)	Maximum 1-hr Rolling Average (ppbv)	Average 1-hr Rolling Average (ppbv)	Health Reference Level (ppbv)	Screening Value Source	Hazard Quotient
1,3 BUTADIENE	106-99-0	86,737	56,887	0.10	0.04	0.95	EPA RSL Non-Cancer	0.0448
ACETYLENE	74-86-2	86,737	56,887	0.26	0.13	2500	TCEQ Long-Term AMCV	0.0001
BENZENE	71-43-2	86,737	56,887	0.41	0.21	3	ATSDR Chronic MRL	0.0685
BUTANES*	75-28-5	86,737	56,887	5.36	2.02	10000	TCEQ Long-Term AMCV	0.0002
BUTENES*	590-18-1	86,737	56,887	3.59	0.82	700	TCEQ Long-Term AMCV	0.0012
CARBON DISULFIDE	75-15-0	86,737	56,887	0.02	0.01	225	EPA Inhalation RfCi	0.0000
CYCLOPENTANE	287-92-3	86,738	56,888	4.47	0.79	590	TCEQ Long-Term AMCV	0.0013
DECANES	124-18-5	86,737	56,887	0.32	0.12	190	TCEQ Long-Term AMCV	0.0006
DIETHYLBENZENES*	141-93-5	86,737	56,887	0.11	0.04	45	TCEQ Long-Term AMCV	0.0009
DIMETHYLCYCLOHEXANES*	638-04-0	86,737	56,887	0.06	0.02	400	CDPHE	0.0000
DODECANES	112-40-3	86,737	56,887	0.00	0.00	3.8	CDPHE	0.0002
ETHYLENE	74-85-1	86,737	56,887	11.22	6.71	5300	TCEQ Long-Term AMCV	0.0013
HEPTANES*	142-82-5	86,737	56,887	0.17	0.07	98	EPA Inhalation RfCi	0.0008
HEXANES*	110-54-3	86,737	56,887	0.18	0.06	199	EPA Inhalation RfCi	0.0003
HEXENES*	592-41-6	86,737	56,887	1.66	0.37	50	TCEQ Long-Term AMCV	0.0074
HYDROGEN CYANIDE	74-90-8	86,737	56,887	0.38	0.16	0.75	EPA RSL Non-Cancer	0.2115
HYDROGEN SULFIDE	7783-06-4	86,737	56,887	0.41	0.19	1.4	EPA Inhalation RfCi	0.1333
ISOPRENE	78-79-5	86,737	56,887	0.54	0.21	140	TCEQ Long-Term AMCV	0.0015
METHANOL	67-56-1	86,737	56,887	11.54	4.31	15261	EPA Inhalation RfCi	0.0003
METHYLCYCLOHEXANE	108-87-2	86,737	56,887	0.10	0.03	400	TCEQ Long-Term AMCV	0.0001
NONANES	111-84-2	86,737	56,887	0.11	0.02	3.8	EPA Inhalation RfCi	0.0059
OCTANES*	111-65-9	86,737	56,887	0.26	0.06	380	TCEQ Long-Term AMCV	0.0002
PENTANES*	109-66-0	86,737	56,887	0.24	0.11	339	EPA Inhalation RfCi	0.0003
PROPYLENE	115-07-1	86,737	56,887	0.64	0.19	1801	EPA RSL Non-Cancer	0.0001
STYRENE	100-42-5	86,737	56,887	1.57	0.08	235	EPA Inhalation RfCi	0.0003
TETRACHLOROETHYLENE	127-18-4	86,737	56,887	0.09	0.01	5.9	EPA Inhalation RfCi	0.0020
TOLUENE	108-88-3	86,737	56,887	0.90	0.37	1327	EPA Inhalation RfCi	0.0003
TRIMETHYLBENZENES*	622-96-8	86,737	56,887	0.41	0.09	25	TCEQ Long-Term AMCV	0.0038
UNDECANES	1120-21-4	86,737	56,887	0.08	0.03	55	TCEQ Long-Term AMCV	0.0006
XYLENES*	1330-20-7	86,737	56,887	1.26	0.44	23	EPA Inhalation RfCi	0.0190
							Hazard Index	0.5066

*For analyte isomer groups which were unable to be differentiated, the lowest health reference value of the isomer group was selected for use in this assessment.

Mobile Sampling Van Data Summary and Risk Assessment
Western Hills Neighborhood | Q3 2021 - Q1 2023

Analyte	Cas No	Count of 1-second Concentrations (#)	Count of 1-hr Rolling Averages Derived (#)	Maximum 1-hr Rolling Average (ppbv)	Average 1-hr Rolling Average (ppbv)	Health Reference Level (ppbv)	Screening Value Source	Hazard Quotient
1,3 BUTADIENE	106-99-0	69,349	45,641	0.08	0.04	0.95	EPA RSL Non-Cancer	0.0415
ACETYLENE	74-86-2	69,349	45,641	0.36	0.20	2500	TCEQ Long-Term AMCV	0.0001
BENZENE	71-43-2	69,349	45,641	0.49	0.25	3	ATSDR Chronic MRL	0.0844
BUTANES*	75-28-5	69,349	45,641	4.91	2.58	10000	TCEQ Long-Term AMCV	0.0003
BUTENES*	590-18-1	69,349	45,641	3.23	1.64	700	TCEQ Long-Term AMCV	0.0023
CARBON DISULFIDE	75-15-0	69,349	45,641	0.02	0.01	225	EPA Inhalation RfCi	0.0000
CYCLOPENTANE	287-92-3	69,349	45,641	3.14	1.44	590	TCEQ Long-Term AMCV	0.0024
DECANES	124-18-5	69,349	45,641	0.11	0.05	190	TCEQ Long-Term AMCV	0.0003
DIETHYLBENZENES*	141-93-5	69,349	45,641	0.72	0.09	45	TCEQ Long-Term AMCV	0.0021
DIMETHYLCYCLOHEXANES*	638-04-0	69,349	45,641	0.15	0.06	400	CDPHE	0.0002
DODECANES	112-40-3	69,349	45,641	0.02	0.00	3.8	CDPHE	0.0005
ETHYLENE	74-85-1	69,349	45,641	12.13	6.34	5300	TCEQ Long-Term AMCV	0.0012
HEPTANES*	142-82-5	69,349	45,641	0.09	0.04	98	EPA Inhalation RfCi	0.0004
HEXANES*	110-54-3	69,349	45,641	0.18	0.08	199	EPA Inhalation RfCi	0.0004
HEXENES*	592-41-6	69,349	45,641	2.48	1.07	50	TCEQ Long-Term AMCV	0.0215
HYDROGEN CYANIDE	74-90-8	69,349	45,641	0.37	0.14	0.75	EPA RSL Non-Cancer	0.1851
HYDROGEN SULFIDE	7783-06-4	69,349	45,641	0.26	0.14	1.4	EPA Inhalation RfCi	0.0972
ISOPRENE	78-79-5	69,349	45,641	1.13	0.25	140	TCEQ Long-Term AMCV	0.0018
METHANOL	67-56-1	69,349	45,641	11.06	5.89	15261	EPA Inhalation RfCi	0.0004
METHYLCYCLOHEXANE	108-87-2	69,349	45,641	0.18	0.05	400	TCEQ Long-Term AMCV	0.0001
NONANES	111-84-2	69,349	45,641	0.05	0.02	3.8	EPA Inhalation RfCi	0.0060
OCTANES*	111-65-9	69,349	45,641	0.12	0.06	380	TCEQ Long-Term AMCV	0.0001
PENTANES*	109-66-0	69,349	45,641	0.55	0.13	339	EPA Inhalation RfCi	0.0004
PROPYLENE	115-07-1	69,349	45,641	0.81	0.23	1801	EPA RSL Non-Cancer	0.0001
STYRENE	100-42-5	69,349	45,641	0.46	0.12	235	EPA Inhalation RfCi	0.0005
TETRACHLOROETHYLENE	127-18-4	69,349	45,641	0.12	0.02	5.9	EPA Inhalation RfCi	0.0030
TOLUENE	108-88-3	69,349	45,641	2.45	0.91	1327	EPA Inhalation RfCi	0.0007
TRIMETHYLBENZENES*	622-96-8	69,349	45,641	2.25	0.35	25	TCEQ Long-Term AMCV	0.0139
UNDECANES	1120-21-4	69,349	45,641	0.07	0.03	55	TCEQ Long-Term AMCV	0.0006
XYLENES*	1330-20-7	69,349	45,641	1.57	0.71	23	EPA Inhalation RfCi	0.0307
							Hazard Index	0.4983

*For analyte isomer groups which were unable to be differentiated, the lowest health reference value of the isomer group was selected for use in this assessment.