January 7, 2026

Shane E. Khoury, Secretary
Arkansas Department of Energy and Environment
5301 Northshore Drive
North Little Rock, AR 72118

RE: Letter Health Consultation for the 2025 CTEH Air Sampling Study

Dear Secretary Khoury,

At the request of the Arkansas Department of Energy and Environment (E&E), the Arkansas Department of Health (ADH) Environmental Epidemiology Section has reviewed the data associated with the 2025 CTEH Air Sampling Study that was conducted from May 2 to May 12, 2025, for Tontitown, Arkansas [1, 2].

Background History:
Some residents of Tontitown, Arkansas, have voiced concerns regarding air quality and health effects. In December 2023, out of an abundance of caution, the E&E requested assistance from the Arkansas Army National Guard 61st Civil Support Team to conduct air quality monitoring for 24 hours. Air contaminants/compounds were potentially detected, and therefore, E&E retained the services of the Center for Toxicology and Environmental Health, LLC (also known as CTEH) to perform two separate rounds of air quality monitoring. Air compounds were detected during the monitoring periods. However, the source (or sources) could not be identified [3]. As a result, E&E initiated a request for proposal and retained CTEH to conduct another air sampling study in the Tontitown community. This investigation aimed to identify the potential source(s) of the compounds found in previous air sampling studies and evaluate public health exposures [1].

Additional background and demographic information can also be found in the previous Letter Health Consultations (LHCs) dated in April 2024 and July 2024 [3,4]. Also, past air monitoring results, fact sheets, and other information can be found on the E&E website, www.adeq.state.ar.us/tontitown [5].

Overview of the Air Sampling Study:

The 2025 CTEH Air Sampling Study lasted eleven (11) days, including two weekends, starting on May 2 and ending on May 12, 2025. The air investigation focused on ambient air along the fenceline surrounding the Eco Vista Landfill (located off Arbor Acres Road at 2210 Waste Management Dr., Springdale, AR), the Tontitown community area (within 3 miles of the landfill perimeter), the haul route (a marked route for garbage trucks), and background locations.

The air investigation included the following:

- Eighteen (18) fixed locations within the community, along the landfill's fenceline, and at background locations,
- Fixed location and roaming odor assessments,
- Real-time air monitoring,
- A community hotline to facilitate responsive air sampling, and
- A weather station to obtain meteorological data for the area.

According to the 2025 CTEH Air Sampling Study Report, there were no compounds that met the criteria to be identified as "Contribution Most Likely from Landfill", see page 5 for definition. There were compounds that met the criteria: "Contribution Likely from Landfill", "Contribution Possibly from Landfill", and "Contribution Not Likely from Landfill-Compounds Levels Not Distinguishable from Background", "Contribution Not Likely from Landfill-Compounds Levels Possibly from Another Emission Sources", and "Not Detected in All Samples." Additional information on compounds and the methodology behind this criterion can be found in the 2025 CTEH Air Sampling Study Report [1].

E&E has asked ADH to provide a public health assessment regarding the compounds that met the criteria related to the landfill: "Contribution Most Likely from Landfill," "Contribution Likely from Landfill," and "Contribution Possibly from Landfill." Additionally, E&E asked ADH to evaluate acrylonitrile, a compound that did not meet the contribution criteria from the landfill, but was found to exceed U.S. background ambient air levels [1, 2].

This letter health consultation (LHC) provides an assessment for contaminants detected during the 2025 CTEH Air Sampling Study, utilizing 24-hour consecutive air data and real-time air data. The 1-hour grab air samples and odor assessments were excluded from this assessment because they provide a snapshot of conditions at specific times and locations. The 24-hour consecutive air data offer a representative sampling of compound concentrations over a typical day, especially for compounds that fluctuate. Real-time air monitoring enables early detection of sudden compound spikes [6,7].

Health Risk Evaluation Methodology:

The ADH Environmental Epidemiology Section completed this assessment using the Agency for Toxic Substances and Disease Registry (ATSDR) public health assessment process and followed federal guidance from the U.S Environmental Protection Agency (EPA) [7,8,9,10,11].

Discussion:

Generally, when evaluating potential or existing health hazards for an exposed population, all available (such as on-site and off-site) environmental data for media (e.g., air, soil, surface water, groundwater, biota) are reviewed. The validity of the conclusions in this evaluation depends on the accuracy and reliability of the data provided in the cited reports.

Exposure to a contaminant of concern (COC) is determined by examining human exposure pathways. An exposure pathway has five parts:

1. A source of contamination (e.g., release),
2. An environmental medium, such as air, soil, or water, that can hold or move the contamination,
3. A point at which people come into contact with a contaminated medium (e.g., ambient air),
4. An exposure route, such as inhalation, and
5. A population who could come into contact with the contaminants (e.g., people potentially or actually exposed).

An exposure pathway is eliminated if at least one of the five parts is missing and will not occur in the future. For a completed pathway, all five parts must exist, and exposure to a contaminant must have occurred, is occurring, or will occur.

For this LHC, a potential past, current, and future exposure pathway exists for anyone breathing at the exposure units: ambient air in the Background Area and Generalized Area (fenceline, community, and haul route areas). For evaluating potential air exposures from ambient air, ADH considered only inhalation (breathing) as the primary exposure route.

A completed exposure pathway does not necessarily mean that harmful health effects will occur. A chemical's ability to harm health depends on many factors, including how much of the chemical is present, how long and how often a person is exposed to the chemical, and how toxic the chemical is. Further assessment of the specific type of exposure is necessary to determine whether it could potentially cause harmful effects in an individual. Other considerations include additional chemical and environmental exposures, along with a person's age, sex, family traits, behavioral factors (such as smoking and diet), and state of health.

Public Health Implications

The relative toxicity of a chemical is important, but the body's response to a chemical exposure also depends on several other factors, including concentration (how much), duration of exposure (how long), and the route of exposure (i.e., breathing, eating, drinking, or skin contact). Lifestyle factors (i.e., occupation and personal habits) may have a major impact on the likelihood, magnitude, and duration of exposure. Individual characteristics, such as age, sex, nutritional status, overall health, and genetic constitution, affect the way a human body absorbs, distributes, metabolizes, and eliminates a contaminant. A unique combination of these factors determines a person's physiologic response to a chemical contaminant and any adverse health effects that could result from the exposure.

ADH followed the ATSDR public health assessment process for this evaluation. Based on scientific data cited in the ATSDR's toxicological profiles, ATSDR has determined levels of chemicals that can reasonably be regarded as harmless. The resulting comparison values (CVs) and health guidelines are used to screen contaminant concentrations at a site and to select substances warranting closer scrutiny by agency health assessors and toxicologists. Of key importance is that ATSDR's and the EPA CVs and health guidelines represent conservative levels of safety and not thresholds of toxicity. While concentrations at or below a CV are considered safe, it does not automatically follow that any concentration above a CV will necessarily produce toxic effects. ATSDR's (and EPA's) CVs are intentionally designed to be much lower than the corresponding no-effect levels (or lowest-effect levels) determined in laboratory studies. ATSDR uses CVs (regardless of the source) solely to screen individual contaminants. ATSDR considers that a compound warrants further evaluation if the maximum (or highest) single recorded concentration of that contaminant in the medium in question exceeds that compound's lowest available CV for potentially exposed people. This process results in the selection of many chemicals as "COCs" that will not, upon closer scrutiny, be judged to pose any hazard to human health [8,12].

It is important to note that, although the 2025 Air Sampling Study included odor assessments, odors in the environment can originate from various sources, including human activities, animals, natural processes, vehicles, and industrial operations. The ATSDR considers odor thresholds separately from its health-based CVs. While odors may cause nuisance and stress-related symptoms, CVs are established to screen for potentially harmful toxic effects. The odor threshold of a substance is not a dependable indicator of its potential to cause adverse health effects. An odor threshold can be lower than the CVs, which implies that an individual may detect the chemical odor at a concentration below the level that could potentially cause health effects [9].

Evaluation:

A contaminant must first enter the body before it can affect the body. The toxicologic evaluation focuses primarily on completed pathways of exposure and potential pathways where a high probability exists that exposures have occurred or will occur.

The evaluation of health effects associated with inhalation involves comparing air concentrations from the sampling event to health-based guidelines developed by ATSDR and other agencies, such as the EPA. People exposed for a specified length of time to COCs at levels greater than established guidelines are more likely to have an associated illness or disease. Accordingly, air monitoring samples of contaminant concentrations were compared with chemical-specific information about health effects that could occur at or below concentrations detected in the air monitoring samples.

To identify COCs, the maximum concentration of the chemical must exceed a CV in at least one sample collected during the air monitoring period. COCs were evaluated further to determine whether an increased likelihood existed that inhalation of the contaminant at the exposure point concentration (EPC) could adversely affect health. Although the air sampling and monitoring were limited to eleven (11) days, the evaluation of effects associated with chronic exposure assumed that the sampling and monitoring period captured typical ongoing exposures. Again,

exceeding the CV does not necessarily mean a contaminant represents a public health threat; it does, however, suggest that the contaminant warrants further consideration.

Meteorological Data:
The 2025 CTEH Air Sampling Study recorded meteorological data (weather changes) during the eleven (11) day study period. Meteorological measurements (temperatures, time of day, wind direction, and wind speed) are essential for data analysis, as these measurements have a direct effect on air contaminant (pollutant) concentrations or travel.

The time of day or season when such conditions occur may indicate the source of air pollutants. Identifying the time of the day ensures that representative data from time periods are observed. Wind speed affects the travel time from the air pollutant source to the receptor (air sampling and monitoring device). The dilution of air pollutants in the air will travel in the downwind direction. The concentrations of air pollutants are inversely proportional to the wind speed. Wind direction influences the general movements of air pollutants in the atmosphere. Temperature differentials may exist that could change the characteristics of the gases [6,9].

According to the 2025 CTEH Air Sampling Study Report, wind speed and direction were recorded at a fixed weather station located near the landfill fenceline. During the investigation, average wind speeds ranged from 0.83 to 3.41 miles per hour (mph). On four days, the wind predominantly came from the south-southeast (SSE) direction [1].

24-Hour Continuous Fixed Air Sampling:
The consecutive 24-hour air testing at eighteen (18) fixed locations was conducted to measure hydrogen fluoride (HF) and EPA Air Method Toxic Organic -15 (TO-15), group of volatile organic compounds (VOCs), by using air sampling pumps for HF and evacuated 6 L canisters for TO-15 over the entire air sampling period, which spanned eleven (11) consecutive days. These locations comprised the Tontitown community (situated within three (3) miles of the adjacent landfill), sites along the perimeter of the landfill (referred to as the landfill fenceline), and background locations positioned more than three (3) miles from the landfill's fenceline. Furthermore, air sampling devices were strategically distributed along the designated haul route [1].

All canisters were leak checked and pressure checked prior to deployment in accordance with CTEH's Evacuated Air Canister Sampling and Management Standard Operating Procedure. Field personnel checked the flow controller pressure gauge and document canister pressures at each visit to the sampling location (minimum once, approximately halfway through the sampling period) [1].

Real-Time Air Sampling:
CTEH personnel conducted real-time air monitoring using handheld instruments to measure total VOCs, benzene, atmospheric flammability (as a percentage of the lower explosive limit), oxygen, sulfur dioxide, and hydrogen sulfide. Real-time air monitoring was carried out along a route of thirteen (13) fixed locations extending from the landfill fenceline into the surrounding community, in conjunction with roaming odor assessments and responses to hotline complaints.

Real-time air monitoring was used as a screening tool to detect the presence or absence of these parameters in the complaint response locations. Additional information on methods for real-time air monitoring can be found in the 2025 CTEH Air Sampling Study [1].

Results:

ATSDR's guidelines recommend first screening ambient air analytical results against chemical-specific CVs. CVs are concentrations of chemicals in the air (or other media, like drinking water) below which no harmful health effects are expected to occur, even with continuous exposure. Concentrations higher than the corresponding CV do not necessarily result in harm but should be evaluated further. CVs may include values derived from ATSDR, such as Minimum Risk Levels (MRL), and values developed by other state, federal, or international organizations. MRLs are derived for acute (1-14 days), intermediate (>14-364 days), and chronic (365 days and longer) exposure durations, and for the inhalation route of exposure.

Table 1 presents the maximum detected concentrations of potential contaminants of concern at the fixed sampling locations, along with the corresponding ATSDR CVs.

Table 1. Maximum Concentrations of Potential Contaminants of Concern at Fixed Sampling Locations, with the Associated ATSDR's Comparison Values (CVs).

Chemicals of Concern	Generalized Area	Background Area	ATSDR CV
Units in micrograms per cubic meter (µg/m^3)			
1,2-Dichloroethane	**0.1**	**NA**	**CREG 0.038**
1,3-Butadiene	**0.11**	**NA**	**CREG 0.033**
Acrolein	**1**	**0.86**	**RMEG 0.020**
Acrylonitrile	**8.8**	**33**	**CREG 0.015**
Benzene	**2.5**	**1.5**	**CREG 0.13**
Carbon Tetrachloride	**0.65**	**0.55**	**CREG 0.17**
Chloroform	**0.38**	**0.19**	**CREG 0.043**

This table was generated using ATSDR's PHAST v2.6.0.0.
NA: Not Applicable as it was not detected in that exposure unit.
BOLD VALUE: HQ Exceedance of 1
CREG: Cancer Risk Evaluation Guide
Generalized Area: Comprises fourteen locations that were designated as fenceline, community, and haul route locations.
Background Area: Comprises four locations that were designated as background locations.

The potential exposure from the EPC was further evaluated by comparing the estimated dose to the ATSDR's MRL by calculating a hazard quotient (HQ). The HQ is the ratio of an EPC divided by the health guidelines, such as the MRL. If the HQ for a chemical is equal to or less than one, it is believed that there is no appreciable risk that non-cancer health effects will occur. If the HQ

exceeds one, further evaluation is necessary to understand the possibility that non-cancer effects may occur, although an HQ above one does not necessarily indicate an effect will occur. This is because of the margin of safety inherent in the derivation of all health-based toxicity values. The larger the HQ value, the more likely it is that a health effect may occur.

Out of all the compounds that met the criteria to calculate HQs, only acrylonitrile had HQs above 1. Acrylonitrile's chronic and intermediate HQ values for both the Background and Generalized Areas exceeded 1, indicating that there is an exceedance of the non-cancer health guidelines. Therefore, a more thorough analysis of its toxicological effects should be conducted. Additionally, the ATSDR and EPA report that the average ambient urban air concentrations of acrylonitrile in the U.S. from 2020 to 2022 were 0.1 parts per billion (ppb) (0.1 $\mu g/m^3$) [13].

The estimated risk assessment for acrylonitrile was based on the maximum concentration observed/reported for each exposure unit, as determined by federal guidance [14]. This assessment is conservative and may overestimate exposure risks. It is important to note that this is a theoretical estimate of non-cancer risk that the ATSDR uses to determine whether public health actions are necessary to protect community health. It should not be interpreted as an actual estimate of non-cancer cases within a community.

For a residential scenario, ATSDR recommends calculating lifetime cancer risk (LCR), central tendency exposure (CTE), and reasonable maximum exposure (RME). The LCR is an estimated theoretical excess cancer risk expressed as the proportion of a population that may be affected by a carcinogen during a specified time of exposure. The LCR uses an average lifetime expectancy of 78 years for adults (both males and females). The 95th percentile (RME) residential occupancy period (ROP: length of time a person resides in a specific property) is 33 years, and the 50th percentile (CTE) ROP is 12 years [11]. If the ATSDR did not have an established CREG value for a particular carcinogen that had been identified, ADH adhered to federal guidelines for calculating the LCR. In these instances, ADH utilized the Inhalation Unit Risk (IUR) values established by the Environmental Protection Agency (EPA) as the basis for their calculations [15].

Risks greater than one in 1,000,000 (or 1 x 10-6) represent no excess risk of cancer, but less than 1 in 10,000 (or 1 x 10-4) are within the U.S. EPA's target risk range and considered an adequate level of health safety [11]. If the LCR is greater than 1 in 10,000, it is generally considered an indicator that further evaluation or action to eliminate exposure would be warranted. RME and CTE will be calculated for a noncancer HQ and cancer risk. RME refers to people who are at the high end of the exposure distribution (approximately the 95th percentile) but still within a realistic exposure range. CTE refers to an individual who has an average or typical exposure to a contaminant [10].

Out of the compounds that met the criteria for screening against cancer health guidelines, only acrylonitrile had a cancer risk that met the criteria of concern. Refer to Tables 2-3. The estimated risk assessment for acrylonitrile was based on the maximum concentration for each exposure unit, determined by federal guidance. This is a conservative assessment that might overestimate exposure risk. Note, this is a theoretical estimate of cancer risk that ATSDR uses as a tool for

deciding whether public health actions are needed to protect health – it is not an actual estimate of cancer cases in a community.

Table 2 presents the noncancer hazard quotients and cancer risk estimates for chronic exposures to acrylonitrile in air 8.8 µg/m³ (4.1 ppb) at the Generalized Area for the entire duration.

Table 2. Noncancer Hazard Quotients and Cancer Risk Estimates for Chronic Exposures to Acrylonitrile in Air 8.8 µg/m³ (4.1 ppb) at the Generalized Area for the Entire Duration.

Exposure Age Group	Estimated Chronic Exposures					
	CTE Noncancer HQ	CTE Cancer Risk	CTE Exposure Duration (Years)	RME Noncancer HQ	RME Cancer Risk	RME Exposures (Years)
Birth to <1 year	**4.4**	-	1	**4.4**	-	1
1 to < 2 years	**4.4**	-	1	**4.4**	-	1
2 to < 6 years	**4.4**	-	4	**4.4**	-	4
6 to < 11 years	**4.4**	-	5	**4.4**	-	5
11 to <16 years	**4.4**	-	1	**4.4**	-	5
16 to < 21 years	**4.4**	-	0	**4.4**	-	5
Total Child	-	**9.5E-5**	12	-	**1.6E-4**	21
Adult	**4.4**	**9.2E-5**	12	**4.4**	**2.5E-4**	33
Birth to < 21 years plus 12 years during adulthood	-	-	-	-	**2.5E-4***	33

The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the chronic (greater than 1 year) reference concentration of 2 µg/m^{3,} and the cancer risks were calculated using the inhalation unit risk of 6.8E-5 (µg/m^3)$^{-1}$.
*This cancer risk represents a scenario where children are likely to continue to live in their childhood home as adults.
HQ: Hazard Quotient
CTE: Central Tendency Exposure
RME: Reasonable Maximum Exposure
BOLD VALUE: HQ Exceedance of 1

Table 3 presents the noncancer hazard quotients and cancer risk estimates for chronic exposures to acrylonitrile in air 33 µg/m³ (15 ppb) at the Background Area for the entire duration.

Table 3. Noncancer Hazard Quotients and Cancer Risk Estimates for Chronic Exposures to Acrylonitrile in Air 33 µg/m³ (15 ppb) at the Background Area for the Entire Duration.

Exposure Age Group	CTE Noncancer HQ	CTE Cancer Risk	CTE Exposure Duration (Years)	RME Noncancer HQ	RME Cancer Risk	RME Exposures (Years)
Birth to <1 year	**17**	-	1	**17**	-	1
1 to < 2 years	**17**	-	1	**17**	-	1
2 to < 6 years	**17**	-	4	**17**	-	4
6 to < 11 years	**17**	-	5	**17**	-	5
11 to <16 years	**17**	-	1	**17**	-	5
16 to < 21 years	**17**	-	0	**17**	-	5
Total Child	-	**3.5E-4**	12	-	**6.0E-4**	21
Adult	**17**	**3.5E-4**	12	**17**	**9.5E-4**	33
Birth to < 21 years plus 12 years during adulthood	**-**		-	-	**9.5E-4***	33

The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the chronic (greater than 1 year) reference concentration of 2 µg/m^3, and the cancer risks were calculated using the inhalation unit risk of 6.8E-5 (µg/m^3)$^{-1}$.
*This cancer risk represents a scenario where children are likely to continue to live in their childhood home as adults.
HQ: Hazard Quotient
CTE: Central Tendency Exposure
RME: Reasonable Maximum Exposure
BOLD VALUE: HQ Exceedance of 1

Background air sampling locations measure concentrations that aim to represent both naturally occurring levels of contamination and human-made levels not related to specific site activities. The acrylonitrile Background Area air maximum concentrations were 33 µg/m³, and the Generalized Area air maximum concentrations were 8.8 µg/m³. When background air concentrations are higher than the measured concentrations at a site, it becomes difficult to determine whether the increase in cancer and non-cancer rates is due to background levels or specific chemical exposure areas [6, 9]. Overall, the CTE and RME cancer risk for acrylonitrile does indicate a concern.

Out of the detected compounds, only one compound, Acrylonitrile, met the criteria for concern for both non-cancer and cancer risk. While other compounds were identified as potential COCs, further investigation revealed that they did not meet criteria for concern, such as HQ >1, cancer risks greater than one in 10,000 (or 1x10-4), and detected concentrations were outside of what is expected for urban environments. Additional information on those COCs can be found in the Appendix.

Real-Time Air Monitoring Results:
CTEH personnel conducted real-time air monitoring during this investigation, yielding no detections for the parameters tested, including benzene, hydrogen sulfide, lower explosive limits, sulfur dioxide, and total VOCs [1]. However, it's important to note that the detection limits of the laboratory equipment (such as what was used for the analysis of the 24 continuous fixed air sampling canisters) are more sensitive than those of real-time equipment, so a lack of detections in real-time air monitoring does not confirm the absence of the assessed compounds.

Health Education:
The health education provided focused solely on contaminants that met the criteria of concern for the 2025 CTEH Air Sampling Study.

Acrylonitrile is a colorless liquid chemical with a sharp, onion- or garlic-like smell. It is used to produce products like plastics, synthetic rubber, and acrylic fibers. You can find acrylonitrile in the environment—air, soil, and water—near industrial sites where it is manufactured. It dissolves in water and evaporates quickly. In the atmosphere, acrylonitrile breaks down rapidly—about half of it disappears within 1 to 12 hours—by reacting with other chemicals and sunlight. Exposure can occur through products containing acrylonitrile, such as clothing or carpeting made from acrylic fibers, or through food stored in plastics based on acrylonitrile. You might also be exposed if you live or work near a factory that produces acrylonitrile. Additionally, tobacco and marijuana smoke can be sources of exposure [13,17,18].

Breathing high concentrations of acrylonitrile can cause nose and throat irritation, difficulty breathing, nausea, dizziness, weakness, headache, impaired judgment, and convulsions. These symptoms usually go away when exposure stops [13,17,18].

The International Agency for Research on Cancer classifies Acrylonitrile as a known human carcinogen. The U.S. Department of Health and Human Services has determined that it is reasonably anticipated to be a human carcinogen, and the EPA classifies it as a probable human carcinogen. Typical urban ambient concentrations are usually very low—often below detection limits but may reach approximately 0.1 to 2 $\mu g/m^3$ (0.05 to 1 ppb) near industrial sources [13,17,18].

Tests are available to detect acrylonitrile or its metabolites in blood and urine, but they cannot predict health outcomes from exposure. These tests are not routinely offered in doctors' offices [17].

<u>Child Health Considerations:</u>
In communities faced with potential contamination, the many physical differences between children and adults may require special emphasis. Children could be at greater risk than adults from certain kinds of exposure to hazardous substances. Children play outdoors and sometimes engage in hand-to-mouth behaviors that increase their exposure potential. Children are shorter than adults; this means they breathe dust, soil, and vapors closer to the ground. A child's lower body weight and higher intake rate result in a greater dose of hazardous substances per unit of body weight. If toxic exposure levels are high enough during critical growth stages, the developing body systems of children can sustain permanent damage. Additionally, children are dependent on adults for access to housing, access to medical care, and risk identification.

Therefore, adults need as much information as possible to make informed decisions regarding their children's health. This health consultation evaluates children's exposure (from birth to 21 years of age) to airborne contaminants that are of concern in a specific area, assessing potential cancer risk scenarios. Additionally, this assessment considered children who would be likely to live in their childhood home into adulthood.

Data Limitations:

This public health assessment specifically focused on the compounds detected in the 2025 CTEH Air Sampling Study collected in May 2025 [1]. This assessment provided an analysis of real-time measurements and consecutive 24-hour consecutive air data, while excluding 1-hour grab air samples and odor assessments. The omission of 1-hour grab samples was due to their limited capacity to provide a comprehensive view of conditions at a particular time and location.

In contrast, consecutive 24-hour air canister data provide a representative understanding of pollutant concentrations throughout a typical day, especially for substances that demonstrate variability. Moreover, real-time monitoring enables the early identification of sudden pollution spikes [6,7].

Additionally, this public health assessment evaluated the previous COCs concentrations reported in previous LHC analyses to determine whether the reportable ranges aligned with the findings from the recent 2025 CTEH Air Sampling Study. It is crucial to acknowledge that while the 2025 CTEH Air Sampling Study was comprehensive by design and builds upon existing historical data for this area, there remain limitations due to the data not representing year-round conditions. Variable atmospheric factors such as temperature, barometric pressure, wind speed, and direction regularly fluctuate and may influence gas concentrations detected in ambient outdoor air, potentially changing over time without a predictable pattern.

Conclusions:

Based on the consecutive 24-hour samples and real-time readings conducted in the 2025 CTEH Air Sampling Study, there are no significant health risks for the compound identified by CTEH as a criterion associated with contributions from the landfill [1]. However, acrylonitrile did reach the criteria for concern regarding both non-cancer and cancer risks.

Given the conservative nature of the cancer risk evaluation for acrylonitrile, the cancer risk is a value of concern. Note that the theoretical estimate of cancer risk that ATSDR uses as a tool for deciding whether public health actions are needed to protect health is not an actual estimate of cancer cases in a community.

The ADH's Environmental Epidemiology Section requested the Arkansas Central Cancer Registry (ACCR) at the ADH to investigate cancer clusters in this region [18]. The Arkansas Central Cancer Registry found the following:

- From 2009 to 2023, the number of cancer cases for all combined cancer types was lower than expected for Washington and Benton counties for each five-year period.
- The SIR for all combined cancer types for Washington County between 2019 and 2023 was 0.87, indicating 13% fewer cancers than expected.

- When evaluating cancer types separately, the SIR for breast cancer was consistently above 1.0 in Washington County, which means the number of people diagnosed with breast cancer was higher than what was expected. Between 2014 and 2018, the SIR in Washington County was 1.15, which means that there were about 15% more cases of breast cancer than what was expected [19].

The ACCR concluded that, based on the results of this investigation, no further action is needed. The report of their findings is in the appendix [19].

Additionally, this public health assessment reviewed historical letter health consultations (including potential COCs) associated with this site. It was found that these previous potential COCs did not meet the criteria of concern.

Recommendations:

For prudent public health, ADH recommends the following:

- E&E to further investigate acrylonitrile in this region, as CTEH identified that the source was not the landfill but another emission source(s).
    - If resources are available, consider investigating acrylonitrile to identify a potential source(s).
- Anyone who has health concerns or feels they may be experiencing symptoms related to environmental factors should contact a healthcare professional.

Please feel free to contact me at 501-661-2893 or ADH.TS@arkansas.gov, if you have any questions.

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* This publication was made possible by a cooperative agreement [program # CDC-RFA-TS-23-0001] from the Agency for Toxic Substances and Disease Registry (ATSDR). Its contents are solely the responsibility of the Arkansas Department of Health and do not necessarily represent the official views of the ATSDR, or the U.S. Department of Health and Human Services.

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Appendix A: Public Health Assessment Site Tool Calculations

Generalized Area

PHAST PUBLIC HEALTH ASSESSMENT SITE TOOL

Contents

PHAST PUBLIC HEALTH ASSESSMENT SITE TOOL

Default Air Residential Results for Chronic, Intermediate, and Acute Duration Exposures
PHAST Report, v2.6.0.0, August 29, 2025

Instructions to Health Assessors

1. Because you have used the "Run Quick Summary" feature in PHAST, this report contains default results in the tables that follow. The default results for chronic, intermediate, and acute durations are based on ATSDR's standard age ranges and are generated using standard default assumptions detailed in the ATSDR Exposure Dose Guidance documents (EDGs). Site-specific information has not been incorporated into these results.

2. You should decide which of these tables should be presented in your public health document to support your conclusions and recommendations. It may not be necessary to include all of them.

Air Inhalation Chronic (Default)

1,2-dichloroethane

Table 1. Residential: Default exposure point concentrations for chronic exposure to 1,2-dichloroethane in air at 0.1 µg/m³ (0.025 ppb) along with cancer risk estimates*

PHAST PUBLIC HEALTH ASSESSMENT SITE TOOL Exposure Group	CTE Adjusted EPC (µg/m³)	CTE Adjusted EPC (ppb)	CTE Noncancer Hazard Quotient	CTE Cancer Risk	CTE Exposure Duration (yrs)	RME Adjusted EPC (µg/m³)	RME Adjusted EPC (ppb)	RME Noncancer Hazard Quotient	RME Cancer Risk	RME Exposure Duration (yrs)
Birth to < 1 year	0.10	0.025	-	-	1	0.10	0.025	-	-	1
1 to < 2 years	0.10	0.025	-	-	1	0.10	0.025	-	-	1
2 to < 6 years	0.10	0.025	-	-	4	0.10	0.025	-	-	4
6 to < 11 years	0.10	0.025	-	-	5	0.10	0.025	-	-	5
11 to < 16 years	0.10	0.025	-	-	1	0.10	0.025	-	-	5
16 to < 21 years	0.10	0.025	-	-	0	0.10	0.025	-	-	5
Total Child	-	-	-	4.0E-7	12	-	-	-	7.0E-7	21
Adult	0.10	0.025	-	4.0E-7	12	0.10	0.025	-	1.1E-6 ‡	33
Birth to < 21 years plus 12 years during adulthood §	-	-	-	-	-	-	-	-	1.1E-6 ‡	33

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion; CTE = central tendency exposure (typical); RME = reasonable maximum exposure (higher); yrs = years

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The cancer risks were calculated using the inhalation unit risk of 2.6E-5 $(\mu g/m^3)^{-1}$.

‡ Indicates that the cancer risk exceeds one extra case in a million people similarly exposed, which ATSDR evaluates further.

§ This cancer risk represents a scenario where children are likely to continue to live in their childhood home as adults.

Table 2. Residential: Default exposure point concentrations for chronic exposure to 1,3-butadiene in air at 0.11 µg/m³ (0.05 ppb) along with noncancer hazard quotients and cancer risk estimates*

PHAST PUBLIC HEALTH ASSESSMENT SITE TOOL Exposure Group	CTE Adjusted EPC (µg/m³)	CTE Adjusted EPC (ppb)	CTE Noncancer Hazard Quotient	CTE Cancer Risk	CTE Exposure Duration (yrs)	RME Adjusted EPC (µg/m³)	RME Adjusted EPC (ppb)	RME Noncancer Hazard Quotient	RME Cancer Risk	RME Exposure Duration (yrs)
Birth to < 1 year	0.11	0.050	0.055	-	1	0.11	0.050	0.055	-	1
1 to < 2 years	0.11	0.050	0.055	-	1	0.11	0.050	0.055	-	1
2 to < 6 years	0.11	0.050	0.055	-	4	0.11	0.050	0.055	-	4
6 to < 11 years	0.11	0.050	0.055	-	5	0.11	0.050	0.055	-	5
11 to < 16 years	0.11	0.050	0.055	-	1	0.11	0.050	0.055	-	5
16 to < 21 years	0.11	0.050	0.055	-	0	0.11	0.050	0.055	-	5
Total Child	-	-	-	5.1E-7	12	-	-	-	8.9E-7	21
Adult	0.11	0.050	0.055	5.1E-7	12	0.11	0.050	0.055	1.4E-6 ‡	33
Birth to < 21 years plus 12 years during adulthood §	-	-	-	-	-	-	-	-	1.4E-6 ‡	33

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion; CTE = central tendency exposure (typical); RME = reasonable maximum exposure (higher); yrs = years

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the chronic (greater than 1 year) reference concentration of 2 µg/m³ and the cancer risks were calculated using the inhalation unit risk of 3.0E-5 $(\mu g/m^3)^{-1}$.

‡ Indicates that the cancer risk exceeds one extra case in a million people similarly exposed, which ATSDR evaluates further.

§ This cancer risk represents a scenario where children are likely to continue to live in their childhood home as adults.

Table 3. Residential: Default exposure point concentrations for chronic exposure to acrolein in air at 0.331773985196443 µg/m³ (0.14 ppb) along with noncancer hazard quotients*

PHAST PUBLIC HEALTH ASSESSMENT SITE TOOL Exposure Group	CTE Adjusted EPC (µg/m³)	CTE Adjusted EPC (ppb)	CTE Noncancer Hazard Quotient	CTE Cancer Risk	CTE Exposure Duration (yrs)	RME Adjusted EPC (µg/m³)	RME Adjusted EPC (ppb)	RME Noncancer Hazard Quotient	RME Cancer Risk	RME Exposure Duration (yrs)
Birth to < 1 year	0.33	0.14	0.36	-	1	0.33	0.14	0.36	-	1
1 to < 2 years	0.33	0.14	0.36	-	1	0.33	0.14	0.36	-	1
2 to < 6 years	0.33	0.14	0.36	-	4	0.33	0.14	0.36	-	4
6 to < 11 years	0.33	0.14	0.36	-	5	0.33	0.14	0.36	-	5
11 to < 16 years	0.33	0.14	0.36	-	1	0.33	0.14	0.36	-	5
16 to < 21 years	0.33	0.14	0.36	-	0	0.33	0.14	0.36	-	5
Total Child	-	-	-	-	12	-	-	-	-	21
Adult	0.33	0.14	0.36	-	12	0.33	0.14	0.36	-	33

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion; CTE = central tendency exposure (typical); RME = reasonable maximum exposure (higher); yrs = years

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the chronic (greater than 1 year) minimal risk level of 0.92 µg/m³.

Table 4. Residential: Default exposure point concentrations for chronic exposure to acrylonitrile in air at 8.8 µg/m³ (4.1 ppb) along with noncancer hazard quotients and cancer risk estimates*

PHAST PUBLIC HEALTH ASSESSMENT SITE TOOL Exposure Group	CTE Adjusted EPC (µg/m³)	CTE Adjusted EPC (ppb)	CTE Noncancer Hazard Quotient	CTE Cancer Risk	CTE Exposure Duration (yrs)	RME Adjusted EPC (µg/m³)	RME Adjusted EPC (ppb)	RME Noncancer Hazard Quotient	RME Cancer Risk	RME Exposure Duration (yrs)
Birth to < 1 year	8.8	4.1	4.4 †	-	1	8.8	4.1	4.4 †	-	1
1 to < 2 years	8.8	4.1	4.4 †	-	1	8.8	4.1	4.4 †	-	1
2 to < 6 years	8.8	4.1	4.4 †	-	4	8.8	4.1	4.4 †	-	4
6 to < 11 years	8.8	4.1	4.4 †	-	5	8.8	4.1	4.4 †	-	5
11 to < 16 years	8.8	4.1	4.4 †	-	1	8.8	4.1	4.4 †	-	5
16 to < 21 years	8.8	4.1	4.4 †	-	0	8.8	4.1	4.4 †	-	5
Total Child	-	-	-	9.2E-5 ‡	12	-	-	-	1.6E-4 ‡	21
Adult	8.8	4.1	4.4 †	9.2E-5 ‡	12	8.8	4.1	4.4 †	2.5E-4 ‡	33
Birth to < 21 years plus 12 years during adulthood §	-	-	-	-	-	-	-	-	2.5E-4 ‡	33

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion; CTE = central tendency exposure (typical); RME = reasonable maximum exposure (higher); yrs = years

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the chronic (greater than 1 year) reference concentration of 2 µg/m³ and the cancer risks were calculated using the inhalation unit risk of 6.8E-5 $(\mu g/m^3)^{-1}$.

† Indicates the hazard quotient is greater than 1, which ATSDR evaluates further.

‡ Indicates that the cancer risk exceeds one extra case in a million people similarly exposed, which ATSDR evaluates further.

§ This cancer risk represents a scenario where children are likely to continue to live in their childhood home as adults.

Table 5. Residential: Default exposure point concentrations for chronic exposure to benzene in air at 0.427976190476191 µg/m³ (0.13 ppb) along with noncancer hazard quotients and cancer risk estimates*

PHAST PUBLIC HEALTH ASSESSMENT SITE TOOL Exposure Group	CTE Adjusted EPC (µg/m³)	CTE Adjusted EPC (ppb)	CTE Noncancer Hazard Quotient	CTE Cancer Risk	CTE Exposure Duration (yrs)	RME Adjusted EPC (µg/m³)	RME Adjusted EPC (ppb)	RME Noncancer Hazard Quotient	RME Cancer Risk	RME Exposure Duration (yrs)
Birth to < 1 year	0.43	0.13	0.067	-	1	0.43	0.13	0.067	-	1
1 to < 2 years	0.43	0.13	0.067	-	1	0.43	0.13	0.067	-	1
2 to < 6 years	0.43	0.13	0.067	-	4	0.43	0.13	0.067	-	4
6 to < 11 years	0.43	0.13	0.067	-	5	0.43	0.13	0.067	-	5
11 to < 16 years	0.43	0.13	0.067	-	1	0.43	0.13	0.067	-	5
16 to < 21 years	0.43	0.13	0.067	-	0	0.43	0.13	0.067	-	5
Total Child	-	-	-	5.1E-7	12	-	-	-	9.0E-7	21
Adult	0.43	0.13	0.067	5.1E-7	12	0.43	0.13	0.067	1.4E-6 ‡	33
Birth to < 21 years plus 12 years during adulthood §	-	-	-	-	-	-	-	-	1.4E-6 ‡	33

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion; CTE = central tendency exposure (typical); RME = reasonable maximum exposure (higher); yrs = years

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the chronic (greater than 1 year) minimal risk level of 6.4 µg/m³ and the cancer risks were calculated using the inhalation unit risk of 7.8E-6 $(\mu g/m^3)^{-1}$.

‡ Indicates that the cancer risk exceeds one extra case in a million people similarly exposed, which ATSDR evaluates further.

§ This cancer risk represents a scenario where children are likely to continue to live in their childhood home as adults.

Table 6. Residential: Default exposure point concentrations for chronic exposure to carbon tetrachloride in air at 0.482380952380952 µg/m³ (0.077 ppb) along with noncancer hazard quotients and cancer risk estimates*

PHAST PUBLIC HEALTH ASSESSMENT SITE TOOL Exposure Group	CTE Adjusted EPC (µg/m³)	CTE Adjusted EPC (ppb)	CTE Noncancer Hazard Quotient	CTE Cancer Risk	CTE Exposure Duration (yrs)	RME Adjusted EPC (µg/m³)	RME Adjusted EPC (ppb)	RME Noncancer Hazard Quotient	RME Cancer Risk	RME Exposure Duration (yrs)
Birth to < 1 year	0.48	0.077	0.0048	-	1	0.48	0.077	0.0048	-	1
1 to < 2 years	0.48	0.077	0.0048	-	1	0.48	0.077	0.0048	-	1
2 to < 6 years	0.48	0.077	0.0048	-	4	0.48	0.077	0.0048	-	4
6 to < 11 years	0.48	0.077	0.0048	-	5	0.48	0.077	0.0048	-	5
11 to < 16 years	0.48	0.077	0.0048	-	1	0.48	0.077	0.0048	-	5
16 to < 21 years	0.48	0.077	0.0048	-	0	0.48	0.077	0.0048	-	5
Total Child	-	-	-	4.5E-7	12	-	-	-	7.8E-7	21
Adult	0.48	0.077	0.0048	4.5E-7	12	0.48	0.077	0.0048	1.2E-6 ‡	33
Birth to < 21 years plus 12 years during adulthood §	-	-	-	-	-	-	-	-	1.2E-6 ‡	33

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion; CTE = central tendency exposure (typical); RME = reasonable maximum exposure (higher); yrs = years

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the chronic (greater than 1 year) reference concentration of 100 µg/m³ and the cancer risks were calculated using the inhalation unit risk of 6.0E-6 $(\mu g/m^3)^{-1}$.

‡ Indicates that the cancer risk exceeds one extra case in a million people similarly exposed, which ATSDR evaluates further.

§ This cancer risk represents a scenario where children are likely to continue to live in their childhood home as adults.

Table 7. Residential: Default exposure point concentrations for chronic exposure to chloroform in air at 0.125017105073779 µg/m³ (0.026 ppb) along with noncancer hazard quotients and cancer risk estimates*

PHAST PUBLIC HEALTH ASSESSMENT SITE TOOL Exposure Group	CTE Adjusted EPC (µg/m³)	CTE Adjusted EPC (ppb)	CTE Noncancer Hazard Quotient	CTE Cancer Risk	CTE Exposure Duration (yrs)	RME Adjusted EPC (µg/m³)	RME Adjusted EPC (ppb)	RME Noncancer Hazard Quotient	RME Cancer Risk	RME Exposure Duration (yrs)
Birth to < 1 year	0.13	0.026	0.063	-	1	0.13	0.026	0.063	-	1
1 to < 2 years	0.13	0.026	0.063	-	1	0.13	0.026	0.063	-	1
2 to < 6 years	0.13	0.026	0.063	-	4	0.13	0.026	0.063	-	4
6 to < 11 years	0.13	0.026	0.063	-	5	0.13	0.026	0.063	-	5
11 to < 16 years	0.13	0.026	0.063	-	1	0.13	0.026	0.063	-	5
16 to < 21 years	0.13	0.026	0.063	-	0	0.13	0.026	0.063	-	5
Total Child	-	-	-	4.4E-7	12	-	-	-	7.7E-7	21
Adult	0.13	0.026	0.063	4.4E-7	12	0.13	0.026	0.063	1.2E-6 ‡	33
Birth to < 21 years plus 12 years during adulthood §	-	-	-	-	-	-	-	-	1.2E-6 ‡	33

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion; CTE = central tendency exposure (typical); RME = reasonable maximum exposure (higher); yrs = years

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the chronic (greater than 1 year) minimal risk level of 2 µg/m³ and the cancer risks were calculated using the inhalation unit risk of 2.3E-5 $(\mu g/m^3)^{-1}$.

‡ Indicates that the cancer risk exceeds one extra case in a million people similarly exposed, which ATSDR evaluates further.

§ This cancer risk represents a scenario where children are likely to continue to live in their childhood home as adults.

Table 8. Residential: Default exposure point concentrations for chronic exposure to ethyl acetate in air at 3.10011308622892 µg/m³ (0.86 ppb)*

PHAST PUBLIC HEALTH ASSESSMENT SITE TOOL Exposure Group	CTE Adjusted EPC (µg/m³)	CTE Adjusted EPC (ppb)	CTE Noncancer Hazard Quotient	CTE Cancer Risk	CTE Exposure Duration (yrs)	RME Adjusted EPC (µg/m³)	RME Adjusted EPC (ppb)	RME Noncancer Hazard Quotient	RME Cancer Risk	RME Exposure Duration (yrs)
Birth to < 1 year	3.1	0.86	-	-	1	3.1	0.86	-	-	1
1 to < 2 years	3.1	0.86	-	-	1	3.1	0.86	-	-	1
2 to < 6 years	3.1	0.86	-	-	4	3.1	0.86	-	-	4
6 to < 11 years	3.1	0.86	-	-	5	3.1	0.86	-	-	5
11 to < 16 years	3.1	0.86	-	-	1	3.1	0.86	-	-	5
16 to < 21 years	3.1	0.86	-	-	0	3.1	0.86	-	-	5
Total Child	-	-	-	-	12	-	-	-	-	21
Adult	3.1	0.86	-	-	12	3.1	0.86	-	-	33

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion; CTE = central tendency exposure (typical); RME = reasonable maximum exposure (higher); yrs = years

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 9. Residential: Default exposure point concentrations for chronic exposure to 1,1,2-trichloro-1,2,2-trifluoroethane in air at 0.468936414580041 µg/m³ (0.061 ppb)*

PHAST PUBLIC HEALTH ASSESSMENT SITE TOOL Exposure Group	CTE Adjusted EPC (µg/m³)	CTE Adjusted EPC (ppb)	CTE Noncancer Hazard Quotient	CTE Cancer Risk	CTE Exposure Duration (yrs)	RME Adjusted EPC (µg/m³)	RME Adjusted EPC (ppb)	RME Noncancer Hazard Quotient	RME Cancer Risk	RME Exposure Duration (yrs)
Birth to < 1 year	0.47	0.061	-	-	1	0.47	0.061	-	-	1
1 to < 2 years	0.47	0.061	-	-	1	0.47	0.061	-	-	1
2 to < 6 years	0.47	0.061	-	-	4	0.47	0.061	-	-	4
6 to < 11 years	0.47	0.061	-	-	5	0.47	0.061	-	-	5
11 to < 16 years	0.47	0.061	-	-	1	0.47	0.061	-	-	5
16 to < 21 years	0.47	0.061	-	-	0	0.47	0.061	-	-	5
Total Child	-	-	-	-	12	-	-	-	-	21
Adult	0.47	0.061	-	-	12	0.47	0.061	-	-	33

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion; CTE = central tendency exposure (typical); RME = reasonable maximum exposure (higher); yrs = years

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 10. Residential: Default exposure point concentrations for chronic exposure to dichlorodifluoromethane in air at 2.69880952380952 µg/m³ (0.55 ppb)*

PHAST PUBLIC HEALTH ASSESSMENT SITE TOOL Exposure Group	CTE Adjusted EPC (µg/m³)	CTE Adjusted EPC (ppb)	CTE Noncancer Hazard Quotient	CTE Cancer Risk	CTE Exposure Duration (yrs)	RME Adjusted EPC (µg/m³)	RME Adjusted EPC (ppb)	RME Noncancer Hazard Quotient	RME Cancer Risk	RME Exposure Duration (yrs)
Birth to < 1 year	2.7	0.55	-	-	1	2.7	0.55	-	-	1
1 to < 2 years	2.7	0.55	-	-	1	2.7	0.55	-	-	1
2 to < 6 years	2.7	0.55	-	-	4	2.7	0.55	-	-	4
6 to < 11 years	2.7	0.55	-	-	5	2.7	0.55	-	-	5
11 to < 16 years	2.7	0.55	-	-	1	2.7	0.55	-	-	5
16 to < 21 years	2.7	0.55	-	-	0	2.7	0.55	-	-	5
Total Child	-	-	-	-	12	-	-	-	-	21
Adult	2.7	0.55	-	-	12	2.7	0.55	-	-	33

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion; CTE = central tendency exposure (typical); RME = reasonable maximum exposure (higher); yrs = years

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 11. Residential: Default exposure point concentrations for chronic exposure to isopropanol in air at 22.9738504427144 µg/m³ (9.3 ppb)*

PHAST PUBLIC HEALTH ASSESSMENT SITE TOOL Exposure Group	CTE Adjusted EPC (µg/m³)	CTE Adjusted EPC (ppb)	CTE Noncancer Hazard Quotient	CTE Cancer Risk	CTE Exposure Duration (yrs)	RME Adjusted EPC (µg/m³)	RME Adjusted EPC (ppb)	RME Noncancer Hazard Quotient	RME Cancer Risk	RME Exposure Duration (yrs)
Birth to < 1 year	23	9.3	-	-	1	23	9.3	-	-	1
1 to < 2 years	23	9.3	-	-	1	23	9.3	-	-	1
2 to < 6 years	23	9.3	-	-	4	23	9.3	-	-	4
6 to < 11 years	23	9.3	-	-	5	23	9.3	-	-	5
11 to < 16 years	23	9.3	-	-	1	23	9.3	-	-	5
16 to < 21 years	23	9.3	-	-	0	23	9.3	-	-	5
Total Child	-	-	-	-	12	-	-	-	-	21
Adult	23	9.3	-	-	12	23	9.3	-	-	33

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion; CTE = central tendency exposure (typical); RME = reasonable maximum exposure (higher); yrs = years

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 12. Residential: Default exposure point concentrations for chronic exposure to n-pentane in air at 1.04767559073351 µg/m³ (0.36 ppb)*

PHAST PUBLIC HEALTH ASSESSMENT SITE TOOL Exposure Group	CTE Adjusted EPC (µg/m³)	CTE Adjusted EPC (ppb)	CTE Noncancer Hazard Quotient	CTE Cancer Risk	CTE Exposure Duration (yrs)	RME Adjusted EPC (µg/m³)	RME Adjusted EPC (ppb)	RME Noncancer Hazard Quotient	RME Cancer Risk	RME Exposure Duration (yrs)
Birth to < 1 year	1.0	0.36	-	-	1	1.0	0.36	-	-	1
1 to < 2 years	1.0	0.36	-	-	1	1.0	0.36	-	-	1
2 to < 6 years	1.0	0.36	-	-	4	1.0	0.36	-	-	4
6 to < 11 years	1.0	0.36	-	-	5	1.0	0.36	-	-	5
11 to < 16 years	1.0	0.36	-	-	1	1.0	0.36	-	-	5
16 to < 21 years	1.0	0.36	-	-	0	1.0	0.36	-	-	5
Total Child	-	-	-	-	12	-	-	-	-	21
Adult	1.0	0.36	-	-	12	1.0	0.36	-	-	33

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion; CTE = central tendency exposure (typical); RME = reasonable maximum exposure (higher); yrs = years

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 13. Residential: Default exposure point concentrations for chronic exposure to propylene in air at 0.284080227485785 µg/m³ (0.17 ppb)*

PHAST PUBLIC HEALTH ASSESSMENT SITE TOOL Exposure Group	CTE Adjusted EPC (µg/m³)	CTE Adjusted EPC (ppb)	CTE Noncancer Hazard Quotient	CTE Cancer Risk	CTE Exposure Duration (yrs)	RME Adjusted EPC (µg/m³)	RME Adjusted EPC (ppb)	RME Noncancer Hazard Quotient	RME Cancer Risk	RME Exposure Duration (yrs)
Birth to < 1 year	0.28	0.17	-	-	1	0.28	0.17	-	-	1
1 to < 2 years	0.28	0.17	-	-	1	0.28	0.17	-	-	1
2 to < 6 years	0.28	0.17	-	-	4	0.28	0.17	-	-	4
6 to < 11 years	0.28	0.17	-	-	5	0.28	0.17	-	-	5
11 to < 16 years	0.28	0.17	-	-	1	0.28	0.17	-	-	5
16 to < 21 years	0.28	0.17	-	-	0	0.28	0.17	-	-	5
Total Child	-	-	-	-	12	-	-	-	-	21
Adult	0.28	0.17	-	-	12	0.28	0.17	-	-	33

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion; CTE = central tendency exposure (typical); RME = reasonable maximum exposure (higher); yrs = years

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 14. Residential: Default exposure point concentrations for chronic exposure to trans-1,2-dichloroethene in air at 0.045 µg/m³ (0.011 ppb)*

PHAST PUBLIC HEALTH ASSESSMENT SITE TOOL Exposure Group	CTE Adjusted EPC (µg/m³)	CTE Adjusted EPC (ppb)	CTE Noncancer Hazard Quotient	CTE Cancer Risk	CTE Exposure Duration (yrs)	RME Adjusted EPC (µg/m³)	RME Adjusted EPC (ppb)	RME Noncancer Hazard Quotient	RME Cancer Risk	RME Exposure Duration (yrs)
Birth to < 1 year	0.045	0.011	-	-	1	0.045	0.011	-	-	1
1 to < 2 years	0.045	0.011	-	-	1	0.045	0.011	-	-	1
2 to < 6 years	0.045	0.011	-	-	4	0.045	0.011	-	-	4
6 to < 11 years	0.045	0.011	-	-	5	0.045	0.011	-	-	5
11 to < 16 years	0.045	0.011	-	-	1	0.045	0.011	-	-	5
16 to < 21 years	0.045	0.011	-	-	0	0.045	0.011	-	-	5
Total Child	-	-	-	-	12	-	-	-	-	21
Adult	0.045	0.011	-	-	12	0.045	0.011	-	-	33

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion; CTE = central tendency exposure (typical); RME = reasonable maximum exposure (higher); yrs = years

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Air Inhalation Intermediate (Default)

1,2-dichloroethane

Table 15. Residential: Default exposure point concentrations for intermediate exposure to 1,2-dichloroethane in air at 0.1 µg/m³ (0.025 ppb) along with noncancer hazard quotients*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	0.10	0.025	0.00025
1 to < 2 years	0.10	0.025	0.00025
2 to < 6 years	0.10	0.025	0.00025
6 to < 11 years	0.10	0.025	0.00025
11 to < 16 years	0.10	0.025	0.00025
16 to < 21 years	0.10	0.025	0.00025
Adult	0.10	0.025	0.00025

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the intermediate (two weeks to less than 1 year) minimal risk level of 400 µg/m³.

Table 16. Residential: Default exposure point concentrations for intermediate exposure to 1,3-butadiene in air at 0.11 µg/m³ (0.05 ppb)*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	0.11	0.050	-
1 to < 2 years	0.11	0.050	-
2 to < 6 years	0.11	0.050	-
6 to < 11 years	0.11	0.050	-
11 to < 16 years	0.11	0.050	-
16 to < 21 years	0.11	0.050	-
Adult	0.11	0.050	-

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 17. Residential: Default exposure point concentrations for intermediate exposure to acrolein in air at 0.331773985196443 µg/m³ (0.14 ppb) along with noncancer hazard quotients*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	0.33	0.14	0.36
1 to < 2 years	0.33	0.14	0.36
2 to < 6 years	0.33	0.14	0.36
6 to < 11 years	0.33	0.14	0.36
11 to < 16 years	0.33	0.14	0.36
16 to < 21 years	0.33	0.14	0.36
Adult	0.33	0.14	0.36

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the intermediate (two weeks to less than 1 year) minimal risk level of 0.92 µg/m³.

Table 18. Residential: Default exposure point concentrations for intermediate exposure to acrylonitrile in air at 8.8 µg/m³ (4.1 ppb) along with noncancer hazard quotients*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	8.8	4.1	5.2 †
1 to < 2 years	8.8	4.1	5.2 †
2 to < 6 years	8.8	4.1	5.2 †
6 to < 11 years	8.8	4.1	5.2 †
11 to < 16 years	8.8	4.1	5.2 †
16 to < 21 years	8.8	4.1	5.2 †
Adult	8.8	4.1	5.2 †

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the intermediate (two weeks to less than 1 year) minimal risk level of 1.7 µg/m³.

† Indicates the hazard quotient is greater than 1, which ATSDR evaluates further.

Table 19. Residential: Default exposure point concentrations for intermediate exposure to benzene in air at 0.427976190476191 µg/m³ (0.13 ppb) along with noncancer hazard quotients*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	0.43	0.13	0.019
1 to < 2 years	0.43	0.13	0.019
2 to < 6 years	0.43	0.13	0.019
6 to < 11 years	0.43	0.13	0.019
11 to < 16 years	0.43	0.13	0.019
16 to < 21 years	0.43	0.13	0.019
Adult	0.43	0.13	0.019

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the intermediate (two weeks to less than 1 year) minimal risk level of 22 µg/m³.

Table 20. Residential: Default exposure point concentrations for intermediate exposure to carbon tetrachloride in air at 0.482380952380952 µg/m³ (0.077 ppb) along with noncancer hazard quotients*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	0.48	0.077	0.0025
1 to < 2 years	0.48	0.077	0.0025
2 to < 6 years	0.48	0.077	0.0025
6 to < 11 years	0.48	0.077	0.0025
11 to < 16 years	0.48	0.077	0.0025
16 to < 21 years	0.48	0.077	0.0025
Adult	0.48	0.077	0.0025

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the intermediate (two weeks to less than 1 year) minimal risk level of 190 µg/m³.

Table 21. Residential: Default exposure point concentrations for intermediate exposure to chloroform in air at 0.125017105073779 µg/m³ (0.026 ppb) along with noncancer hazard quotients*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	0.13	0.026	0.032
1 to < 2 years	0.13	0.026	0.032
2 to < 6 years	0.13	0.026	0.032
6 to < 11 years	0.13	0.026	0.032
11 to < 16 years	0.13	0.026	0.032
16 to < 21 years	0.13	0.026	0.032
Adult	0.13	0.026	0.032

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the intermediate (two weeks to less than 1 year) minimal risk level of 3.9 µg/m³.

Table 22. Residential: Default exposure point concentrations for intermediate exposure to ethyl acetate in air at 3.10011308622892 µg/m³ (0.86 ppb)*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	3.1	0.86	-
1 to < 2 years	3.1	0.86	-
2 to < 6 years	3.1	0.86	-
6 to < 11 years	3.1	0.86	-
11 to < 16 years	3.1	0.86	-
16 to < 21 years	3.1	0.86	-
Adult	3.1	0.86	-

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 23. Residential: Default exposure point concentrations for intermediate exposure to 1,1,2-trichloro-1,2,2-trifluoroethane in air at 0.468936414580041 µg/m³ (0.061 ppb)*

PHAST PUBLIC HEALTH ASSESSMENT SITE TOOL Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	0.47	0.061	-
1 to < 2 years	0.47	0.061	-
2 to < 6 years	0.47	0.061	-
6 to < 11 years	0.47	0.061	-
11 to < 16 years	0.47	0.061	-
16 to < 21 years	0.47	0.061	-
Adult	0.47	0.061	-

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 24. Residential: Default exposure point concentrations for intermediate exposure to dichlorodifluoromethane in air at 2.69880952380952 µg/m³ (0.55 ppb)*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	2.7	0.55	-
1 to < 2 years	2.7	0.55	-
2 to < 6 years	2.7	0.55	-
6 to < 11 years	2.7	0.55	-
11 to < 16 years	2.7	0.55	-
16 to < 21 years	2.7	0.55	-
Adult	2.7	0.55	-

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 25. Residential: Default exposure point concentrations for intermediate exposure to isopropanol in air at 22.9738504427144 µg/m³ (9.3 ppb)*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	23	9.3	-
1 to < 2 years	23	9.3	-
2 to < 6 years	23	9.3	-
6 to < 11 years	23	9.3	-
11 to < 16 years	23	9.3	-
16 to < 21 years	23	9.3	-
Adult	23	9.3	-

Source: [list reference of environmental data]
Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion
* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Pentane, n-

Table 26. Residential: Default exposure point concentrations for intermediate exposure to n-pentane in air at 1.04767559073351 µg/m³ (0.36 ppb)*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	1.0	0.36	-
1 to < 2 years	1.0	0.36	-
2 to < 6 years	1.0	0.36	-
6 to < 11 years	1.0	0.36	-
11 to < 16 years	1.0	0.36	-
16 to < 21 years	1.0	0.36	-
Adult	1.0	0.36	-

Source: [list reference of environmental data]
Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion
* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 27. Residential: Default exposure point concentrations for intermediate exposure to propylene in air at 0.284080227485785 µg/m³ (0.17 ppb)*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	0.28	0.17	-
1 to < 2 years	0.28	0.17	-
2 to < 6 years	0.28	0.17	-
6 to < 11 years	0.28	0.17	-
11 to < 16 years	0.28	0.17	-
16 to < 21 years	0.28	0.17	-
Adult	0.28	0.17	-

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

1,2-dichloroethene, trans-

Table 28. Residential: Default exposure point concentrations for intermediate exposure to trans-1,2-dichloroethene in air at 0.045 µg/m³ (0.011 ppb)*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	0.045	0.011	-
1 to < 2 years	0.045	0.011	-
2 to < 6 years	0.045	0.011	-
6 to < 11 years	0.045	0.011	-
11 to < 16 years	0.045	0.011	-
16 to < 21 years	0.045	0.011	-
Adult	0.045	0.011	-

Source: [list reference of environmental data]
Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion
* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Air Inhalation Acute (Default)

1,2-dichloroethane

Table 29. Residential: Default exposure point concentrations for acute exposure to 1,2-dichloroethane in air at 0.1 µg/m³ (0.025 ppb) along with noncancer hazard quotients*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	0.10	0.025	0.00025
1 to < 2 years	0.10	0.025	0.00025
2 to < 6 years	0.10	0.025	0.00025
6 to < 11 years	0.10	0.025	0.00025
11 to < 16 years	0.10	0.025	0.00025
16 to < 21 years	0.10	0.025	0.00025
Adult	0.10	0.025	0.00025

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the acute (less than two weeks) minimal risk level of 400 µg/m³.

Table 30. Residential: Default exposure point concentrations for acute exposure to 1,3-butadiene in air at 0.11 µg/m³ (0.05 ppb)*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	0.11	0.050	-
1 to < 2 years	0.11	0.050	-
2 to < 6 years	0.11	0.050	-
6 to < 11 years	0.11	0.050	-
11 to < 16 years	0.11	0.050	-
16 to < 21 years	0.11	0.050	-
Adult	0.11	0.050	-

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 31. Residential: Default exposure point concentrations for acute exposure to acrolein in air at 0.331773985196443 µg/m³ (0.14 ppb) along with noncancer hazard quotients*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	0.33	0.14	0.048
1 to < 2 years	0.33	0.14	0.048
2 to < 6 years	0.33	0.14	0.048
6 to < 11 years	0.33	0.14	0.048
11 to < 16 years	0.33	0.14	0.048
16 to < 21 years	0.33	0.14	0.048
Adult	0.33	0.14	0.048

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the acute (less than two weeks) minimal risk level of 6.9 µg/m³ . The standard exposure factor rule does not apply to this chemical.

Table 32. Residential: Default exposure point concentrations for acute exposure to acrylonitrile in air at 8.8 µg/m³ (4.1 ppb)*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	8.8	4.1	-
1 to < 2 years	8.8	4.1	-
2 to < 6 years	8.8	4.1	-
6 to < 11 years	8.8	4.1	-
11 to < 16 years	8.8	4.1	-
16 to < 21 years	8.8	4.1	-
Adult	8.8	4.1	-

Source: [list reference of environmental data]
Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion
* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 33. Residential: Default exposure point concentrations for acute exposure to benzene in air at 0.427976190476191 µg/m³ (0.13 ppb) along with noncancer hazard quotients*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	0.43	0.13	0.015
1 to < 2 years	0.43	0.13	0.015
2 to < 6 years	0.43	0.13	0.015
6 to < 11 years	0.43	0.13	0.015
11 to < 16 years	0.43	0.13	0.015
16 to < 21 years	0.43	0.13	0.015
Adult	0.43	0.13	0.015

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the acute (less than two weeks) minimal risk level of 29 µg/m³.

Table 34. Residential: Default exposure point concentrations for acute exposure to carbon tetrachloride in air at 0.482380952380952 µg/m³ (0.077 ppb)*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	0.48	0.077	-
1 to < 2 years	0.48	0.077	-
2 to < 6 years	0.48	0.077	-
6 to < 11 years	0.48	0.077	-
11 to < 16 years	0.48	0.077	-
16 to < 21 years	0.48	0.077	-
Adult	0.48	0.077	-

Source: [list reference of environmental data]
Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion
* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 35. Residential: Default exposure point concentrations for acute exposure to chloroform in air at 0.125017105073779 µg/m³ (0.026 ppb) along with noncancer hazard quotients*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	0.13	0.026	0.026
1 to < 2 years	0.13	0.026	0.026
2 to < 6 years	0.13	0.026	0.026
6 to < 11 years	0.13	0.026	0.026
11 to < 16 years	0.13	0.026	0.026
16 to < 21 years	0.13	0.026	0.026
Adult	0.13	0.026	0.026

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the acute (less than two weeks) minimal risk level of 4.9 µg/m³.

Table 36. Residential: Default exposure point concentrations for acute exposure to ethyl acetate in air at 3.10011308622892 µg/m³ (0.86 ppb)*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	3.1	0.86	-
1 to < 2 years	3.1	0.86	-
2 to < 6 years	3.1	0.86	-
6 to < 11 years	3.1	0.86	-
11 to < 16 years	3.1	0.86	-
16 to < 21 years	3.1	0.86	-
Adult	3.1	0.86	-

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 37. Residential: Default exposure point concentrations for acute exposure to 1,1,2-trichloro-1,2,2-trifluoroethane in air at 0.468936414580041 µg/m³ (0.061 ppb)*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	0.47	0.061	-
1 to < 2 years	0.47	0.061	-
2 to < 6 years	0.47	0.061	-
6 to < 11 years	0.47	0.061	-
11 to < 16 years	0.47	0.061	-
16 to < 21 years	0.47	0.061	-
Adult	0.47	0.061	-

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 38. Residential: Default exposure point concentrations for acute exposure to dichlorodifluoromethane in air at 2.69880952380952 µg/m³ (0.55 ppb)*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	2.7	0.55	-
1 to < 2 years	2.7	0.55	-
2 to < 6 years	2.7	0.55	-
6 to < 11 years	2.7	0.55	-
11 to < 16 years	2.7	0.55	-
16 to < 21 years	2.7	0.55	-
Adult	2.7	0.55	-

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 39. Residential: Default exposure point concentrations for acute exposure to isopropanol in air at 22.9738504427144 µg/m³ (9.3 ppb)*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	23	9.3	-
1 to < 2 years	23	9.3	-
2 to < 6 years	23	9.3	-
6 to < 11 years	23	9.3	-
11 to < 16 years	23	9.3	-
16 to < 21 years	23	9.3	-
Adult	23	9.3	-

Source: [list reference of environmental data]
Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion
* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Pentane, n-

Table 40. Residential: Default exposure point concentrations for acute exposure to n-pentane in air at 1.04767559073351 µg/m³ (0.36 ppb)*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	1.0	0.36	-
1 to < 2 years	1.0	0.36	-
2 to < 6 years	1.0	0.36	-
6 to < 11 years	1.0	0.36	-
11 to < 16 years	1.0	0.36	-
16 to < 21 years	1.0	0.36	-
Adult	1.0	0.36	-

Source: [list reference of environmental data]
Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion
* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 41. Residential: Default exposure point concentrations for acute exposure to propylene in air at 0.284080227485785 µg/m³ (0.17 ppb)*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	0.28	0.17	-
1 to < 2 years	0.28	0.17	-
2 to < 6 years	0.28	0.17	-
6 to < 11 years	0.28	0.17	-
11 to < 16 years	0.28	0.17	-
16 to < 21 years	0.28	0.17	-
Adult	0.28	0.17	-

Source: [list reference of environmental data]
Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion
* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 42. Residential: Default exposure point concentrations for acute exposure to trans-1,2-dichloroethene in air at 0.045 µg/m³ (0.011 ppb) along with noncancer hazard quotients*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	0.045	0.011	3.7E-6
1 to < 2 years	0.045	0.011	3.7E-6
2 to < 6 years	0.045	0.011	3.7E-6
6 to < 11 years	0.045	0.011	3.7E-6
11 to < 16 years	0.045	0.011	3.7E-6
16 to < 21 years	0.045	0.011	3.7E-6
Adult	0.045	0.011	3.7E-6

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the acute (less than two weeks) minimal risk level of 12000 µg/m³ . The standard exposure factor rule does not apply to this chemical.

Default Input Parameters and Equations
PHAST Report, v2.6.0.0, August 29, 2025

Equations

Air Inhalation Exposure Equation

Adjusted EPC = EPC x $EF_{noncancer}$ **Equation 1**

EPC = exposure point concentration, $EF_{noncancer}$ = exposure factor (unitless)

Hazard Quotient

HQ = Adjusted EPC ÷ HG **Equation 2**

HQ = hazard quotient, EPC = exposure point concentration (µg/m^3 or ppb), HG = health guideline (e.g., inhalation MRL, RfC)

Cancer Risk Equations

CR = (Adjusted EPC x IUR) x (ED ÷ LY) for each exposure group **Equation 3**

ADAF-adjusted CR = (Adjusted EPC x IUR) x (ED ÷ LY) x ADAF for each exposure group **Equation 4**

Total CR = Sum of the CR for all exposure groups **Equation 5**

CR = cancer risk (unitless), EPC = exposure point concentration (µg/m^3 or ppb), IUR = inhalation unit risk ((µg/m^3 or ppb)$^{-1}$), ED = exposure duration (years), LY = lifetime years (78 years), ADAF = age-dependent adjustment factor (unitless), EF (cancer) = exposure factor (cancer) calculated as follows: EF (noncancer; unitless) x exposure group specific exposure duration (years) ÷ lifetime of 78 years

Default Exposure Factors

Duration Category	Hours per Day	Days per Week	Weeks per Year	Years	Exposure Group Specific EF $_{noncancer}$	Exposure Group Specific* EF $_{cancer}$
Acute	24	-	-	-	1	-
Intermediate	24	7	-	-	1	-
Chronic	24	7	52.14	See exposure group specific exposure durations	1	= $EF_{noncancer}$ x ($ED_{age\text{-}specific\ (yrs)}$ ÷ 78 years)

Abbreviations: EF = exposure factor; NC = not calculated

Cancer EFs are not shown in the table because they are calculated using age-specific durations. The general formula is $EF_{cancer} = EF_{noncancer}$ x ($ED_{age\text{-}specific\ (yrs)}$ ÷ 78 years).

Contaminant Information

Contaminant Name	Entered Concentration	EPC Type	Converted Concentration (µg/m³)	Converted Concentration (ppb)
1,2-dichloroethane	0.1 µg/m³	Maximum	0.1	0.025
1,3-butadiene	0.11 µg/m³	Maximum	0.11	0.05
Acrolein	0.331773985196443 µg/m³	95% UCL of the mean	0.33	0.14
Acrylonitrile	8.8 µg/m³	Maximum	8.8	4.1
Benzene	0.427976190476191 µg/m³	95% UCL of the mean	0.43	0.13
Carbon tetrachloride	0.482380952380952 µg/m³	95% UCL of the mean	0.48	0.077
Chloroform	0.125017105073779 µg/m³	95% UCL of the mean	0.13	0.026
Ethyl acetate	3.10011308622892 µg/m³	95% UCL of the mean	3.1	0.86
1,1,2-trichloro-1,2,2-trifluoroethane	0.468936414580041 µg/m³	95% UCL of the mean	0.47	0.061
Dichlorodifluoromethane	2.69880952380952 µg/m³	95% UCL of the mean	2.7	0.55
Isopropanol	22.9738504427144 µg/m³	95% UCL of the mean	23	9.3
Pentane, n-	1.04767559073351 µg/m³	95% UCL of the mean	1	0.36
Propylene	0.284080227485785 µg/m³	95% UCL of the mean	0.28	0.17
1,2-dichloroethene, trans-	0.045 µg/m³	Maximum	0.045	0.011

Abbreviations: µg/m³ = micrograms per meter cubed; EPC = exposure point concentration; UCL = upper confidence limit

Background Area

PHAST PUBLIC HEALTH ASSESSMENT SITE TOOL

Contents

PHAST PUBLIC HEALTH ASSESSMENT SITE TOOL

Default Air Residential Results for Chronic, Intermediate, and Acute Duration Exposures
PHAST Report, v2.6.0.0, August 29, 2025

Instructions to Health Assessors

1. Because you have used the "Run Quick Summary" feature in PHAST, this report contains default results in the tables that follow. The default results for chronic, intermediate, and acute durations are based on ATSDR's standard age ranges and are generated using standard default assumptions detailed in the ATSDR Exposure Dose Guidance documents (EDGs). Site-specific information has not been incorporated into these results.

2. You should decide which of these tables should be presented in your public health document to support your conclusions and recommendations. It may not be necessary to include all of them.

Air Inhalation Chronic (Default)

Acrolein

Table 1. Residential: Default exposure point concentrations for chronic exposure to acrolein in air at 0.350001091107474 µg/m³ (0.15 ppb) along with noncancer hazard quotients*

PHAST PUBLIC HEALTH ASSESSMENT SITE TOOL Exposure Group	CTE Adjusted EPC (µg/m³)	CTE Adjusted EPC (ppb)	CTE Noncancer Hazard Quotient	CTE Cancer Risk	CTE Exposure Duration (yrs)	RME Adjusted EPC (µg/m³)	RME Adjusted EPC (ppb)	RME Noncancer Hazard Quotient	RME Cancer Risk	RME Exposure Duration (yrs)
Birth to < 1 year	0.35	0.15	0.38	-	1	0.35	0.15	0.38	-	1
1 to < 2 years	0.35	0.15	0.38	-	1	0.35	0.15	0.38	-	1
2 to < 6 years	0.35	0.15	0.38	-	4	0.35	0.15	0.38	-	4
6 to < 11 years	0.35	0.15	0.38	-	5	0.35	0.15	0.38	-	5
11 to < 16 years	0.35	0.15	0.38	-	1	0.35	0.15	0.38	-	5
16 to < 21 years	0.35	0.15	0.38	-	0	0.35	0.15	0.38	-	5
Total Child	-	-	-	-	12	-	-	-	-	21
Adult	0.35	0.15	0.38	-	12	0.35	0.15	0.38	-	33

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion; CTE = central tendency exposure (typical); RME = reasonable maximum exposure (higher); yrs = years

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the chronic (greater than 1 year) minimal risk level of 0.92 µg/m³.

Table 2. Residential: Default exposure point concentrations for chronic exposure to acrylonitrile in air at 33 µg/m³ (15 ppb) along with noncancer hazard quotients and cancer risk estimates*

PHAST Public Health Assessment Site Tool Exposure Group	CTE Adjusted EPC (µg/m³)	CTE Adjusted EPC (ppb)	CTE Noncancer Hazard Quotient	CTE Cancer Risk	CTE Exposure Duration (yrs)	RME Adjusted EPC (µg/m³)	RME Adjusted EPC (ppb)	RME Noncancer Hazard Quotient	RME Cancer Risk	RME Exposure Duration (yrs)
Birth to < 1 year	33	15	17 †	-	1	33	15	17 †	-	1
1 to < 2 years	33	15	17 †	-	1	33	15	17 †	-	1
2 to < 6 years	33	15	17 †	-	4	33	15	17 †	-	4
6 to < 11 years	33	15	17 †	-	5	33	15	17 †	-	5
11 to < 16 years	33	15	17 †	-	1	33	15	17 †	-	5
16 to < 21 years	33	15	17 †	-	0	33	15	17 †	-	5
Total Child	-	-	-	3.5E-4 ‡	12	-	-	-	6.0E-4 ‡	21
Adult	33	15	17 †	3.5E-4 ‡	12	33	15	17 †	9.5E-4 ‡	33
Birth to < 21 years plus 12 years during adulthood §	-	-	-	-	-	-	-	-	9.5E-4 ‡	33

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion; CTE = central tendency exposure (typical); RME = reasonable maximum exposure (higher); yrs = years

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the chronic (greater than 1 year) reference concentration of 2 µg/m³ and the cancer risks were calculated using the inhalation unit risk of 6.8E-5 $(\mu g/m^3)^{-1}$.

† Indicates the hazard quotient is greater than 1, which ATSDR evaluates further.

‡ Indicates that the cancer risk exceeds one extra case in a million people similarly exposed, which ATSDR evaluates further.

§ This cancer risk represents a scenario where children are likely to continue to live in their childhood home as adults.

Table 3. Residential: Default exposure point concentrations for chronic exposure to benzene in air at 0.472127659574468 µg/m³ (0.15 ppb) along with noncancer hazard quotients and cancer risk estimates*

PHAST PUBLIC HEALTH ASSESSMENT SITE TOOL Exposure Group	CTE Adjusted EPC (µg/m³)	CTE Adjusted EPC (ppb)	CTE Noncancer Hazard Quotient	CTE Cancer Risk	CTE Exposure Duration (yrs)	RME Adjusted EPC (µg/m³)	RME Adjusted EPC (ppb)	RME Noncancer Hazard Quotient	RME Cancer Risk	RME Exposure Duration (yrs)
Birth to < 1 year	0.47	0.15	0.074	-	1	0.47	0.15	0.074	-	1
1 to < 2 years	0.47	0.15	0.074	-	1	0.47	0.15	0.074	-	1
2 to < 6 years	0.47	0.15	0.074	-	4	0.47	0.15	0.074	-	4
6 to < 11 years	0.47	0.15	0.074	-	5	0.47	0.15	0.074	-	5
11 to < 16 years	0.47	0.15	0.074	-	1	0.47	0.15	0.074	-	5
16 to < 21 years	0.47	0.15	0.074	-	0	0.47	0.15	0.074	-	5
Total Child	-	-	-	5.7E-7	12	-	-	-	9.9E-7	21
Adult	0.47	0.15	0.074	5.7E-7	12	0.47	0.15	0.074	1.6E-6 ‡	33
Birth to < 21 years plus 12 years during adulthood §	-	-	-	-	-	-	-	-	1.6E-6 ‡	33

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion; CTE = central tendency exposure (typical); RME = reasonable maximum exposure (higher); yrs = years

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the chronic (greater than 1 year) minimal risk level of 6.4 µg/m³ and the cancer risks were calculated using the inhalation unit risk of 7.8E-6 $(\mu g/m^3)^{-1}$.

‡ Indicates that the cancer risk exceeds one extra case in a million people similarly exposed, which ATSDR evaluates further.

§ This cancer risk represents a scenario where children are likely to continue to live in their childhood home as adults.

Table 4. Residential: Default exposure point concentrations for chronic exposure to carbon tetrachloride in air at 0.490212765957447 µg/m³ (0.078 ppb) along with noncancer hazard quotients and cancer risk estimates*

PHAST PUBLIC HEALTH ASSESSMENT SITE TOOL Exposure Group	CTE Adjusted EPC (µg/m³)	CTE Adjusted EPC (ppb)	CTE Noncancer Hazard Quotient	CTE Cancer Risk	CTE Exposure Duration (yrs)	RME Adjusted EPC (µg/m³)	RME Adjusted EPC (ppb)	RME Noncancer Hazard Quotient	RME Cancer Risk	RME Exposure Duration (yrs)
Birth to < 1 year	0.49	0.078	0.0049	-	1	0.49	0.078	0.0049	-	1
1 to < 2 years	0.49	0.078	0.0049	-	1	0.49	0.078	0.0049	-	1
2 to < 6 years	0.49	0.078	0.0049	-	4	0.49	0.078	0.0049	-	4
6 to < 11 years	0.49	0.078	0.0049	-	5	0.49	0.078	0.0049	-	5
11 to < 16 years	0.49	0.078	0.0049	-	1	0.49	0.078	0.0049	-	5
16 to < 21 years	0.49	0.078	0.0049	-	0	0.49	0.078	0.0049	-	5
Total Child	-	-	-	4.5E-7	12	-	-	-	7.9E-7	21
Adult	0.49	0.078	0.0049	4.5E-7	12	0.49	0.078	0.0049	1.2E-6 ‡	33
Birth to < 21 years plus 12 years during adulthood §	-	-	-	-	-	-	-	-	1.2E-6 ‡	33

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion; CTE = central tendency exposure (typical); RME = reasonable maximum exposure (higher); yrs = years

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the chronic (greater than 1 year) reference concentration of 100 µg/m³ and the cancer risks were calculated using the inhalation unit risk of 6.0E-6 $(\mu g/m^3)^{-1}$.

‡ Indicates that the cancer risk exceeds one extra case in a million people similarly exposed, which ATSDR evaluates further.

§ This cancer risk represents a scenario where children are likely to continue to live in their childhood home as adults.

Table 5. Residential: Default exposure point concentrations for chronic exposure to chloroform in air at 0.127483415284992 µg/m³ (0.026 ppb) along with noncancer hazard quotients and cancer risk estimates*

PHAST PUBLIC HEALTH ASSESSMENT SITE TOOL Exposure Group	CTE Adjusted EPC (µg/m³)	CTE Adjusted EPC (ppb)	CTE Noncancer Hazard Quotient	CTE Cancer Risk	CTE Exposure Duration (yrs)	RME Adjusted EPC (µg/m³)	RME Adjusted EPC (ppb)	RME Noncancer Hazard Quotient	RME Cancer Risk	RME Exposure Duration (yrs)
Birth to < 1 year	0.13	0.026	0.064	-	1	0.13	0.026	0.064	-	1
1 to < 2 years	0.13	0.026	0.064	-	1	0.13	0.026	0.064	-	1
2 to < 6 years	0.13	0.026	0.064	-	4	0.13	0.026	0.064	-	4
6 to < 11 years	0.13	0.026	0.064	-	5	0.13	0.026	0.064	-	5
11 to < 16 years	0.13	0.026	0.064	-	1	0.13	0.026	0.064	-	5
16 to < 21 years	0.13	0.026	0.064	-	0	0.13	0.026	0.064	-	5
Total Child	-	-	-	4.5E-7	12	-	-	-	7.9E-7	21
Adult	0.13	0.026	0.064	4.5E-7	12	0.13	0.026	0.064	1.2E-6 ‡	33
Birth to < 21 years plus 12 years during adulthood §	-	-	-	-	-	-	-	-	1.2E-6 ‡	33

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion; CTE = central tendency exposure (typical); RME = reasonable maximum exposure (higher); yrs = years

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the chronic (greater than 1 year) minimal risk level of 2 µg/m³ and the cancer risks were calculated using the inhalation unit risk of 2.3E-5 $(\mu g/m^3)^{-1}$.

‡ Indicates that the cancer risk exceeds one extra case in a million people similarly exposed, which ATSDR evaluates further.

§ This cancer risk represents a scenario where children are likely to continue to live in their childhood home as adults.

Table 6. Residential: Default exposure point concentrations for chronic exposure to ethyl acetate in air at 4.48334032892285 µg/m³ (1.2 ppb)*

Exposure Group	CTE Adjusted EPC (µg/m³)	CTE Adjusted EPC (ppb)	CTE Noncancer Hazard Quotient	CTE Cancer Risk	CTE Exposure Duration (yrs)	RME Adjusted EPC (µg/m³)	RME Adjusted EPC (ppb)	RME Noncancer Hazard Quotient	RME Cancer Risk	RME Exposure Duration (yrs)
Birth to < 1 year	4.5	1.2	-	-	1	4.5	1.2	-	-	1
1 to < 2 years	4.5	1.2	-	-	1	4.5	1.2	-	-	1
2 to < 6 years	4.5	1.2	-	-	4	4.5	1.2	-	-	4
6 to < 11 years	4.5	1.2	-	-	5	4.5	1.2	-	-	5
11 to < 16 years	4.5	1.2	-	-	1	4.5	1.2	-	-	5
16 to < 21 years	4.5	1.2	-	-	0	4.5	1.2	-	-	5
Total Child	-	-	-	-	12	-	-	-	-	21
Adult	4.5	1.2	-	-	12	4.5	1.2	-	-	33

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion; CTE = central tendency exposure (typical); RME = reasonable maximum exposure (higher); yrs = years

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 7. Residential: Default exposure point concentrations for chronic exposure to 1,1,2-trichloro-1,2,2-trifluoroethane in air at 0.473404255319149 µg/m³ (0.062 ppb)*

PHAST PUBLIC HEALTH ASSESSMENT SITE TOOL Exposure Group	CTE Adjusted EPC (µg/m³)	CTE Adjusted EPC (ppb)	CTE Noncancer Hazard Quotient	CTE Cancer Risk	CTE Exposure Duration (yrs)	RME Adjusted EPC (µg/m³)	RME Adjusted EPC (ppb)	RME Noncancer Hazard Quotient	RME Cancer Risk	RME Exposure Duration (yrs)
Birth to < 1 year	0.47	0.062	-	-	1	0.47	0.062	-	-	1
1 to < 2 years	0.47	0.062	-	-	1	0.47	0.062	-	-	1
2 to < 6 years	0.47	0.062	-	-	4	0.47	0.062	-	-	4
6 to < 11 years	0.47	0.062	-	-	5	0.47	0.062	-	-	5
11 to < 16 years	0.47	0.062	-	-	1	0.47	0.062	-	-	5
16 to < 21 years	0.47	0.062	-	-	0	0.47	0.062	-	-	5
Total Child	-	-	-	-	12	-	-	-	-	21
Adult	0.47	0.062	-	-	12	0.47	0.062	-	-	33

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion; CTE = central tendency exposure (typical); RME = reasonable maximum exposure (higher); yrs = years

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 8. Residential: Default exposure point concentrations for chronic exposure to dichlorodifluoromethane in air at 2.69574468085106 µg/m³ (0.55 ppb)*

PHAST PUBLIC HEALTH ASSESSMENT SITE TOOL Exposure Group	CTE Adjusted EPC (µg/m³)	CTE Adjusted EPC (ppb)	CTE Noncancer Hazard Quotient	CTE Cancer Risk	CTE Exposure Duration (yrs)	RME Adjusted EPC (µg/m³)	RME Adjusted EPC (ppb)	RME Noncancer Hazard Quotient	RME Cancer Risk	RME Exposure Duration (yrs)
Birth to < 1 year	2.7	0.55	-	-	1	2.7	0.55	-	-	1
1 to < 2 years	2.7	0.55	-	-	1	2.7	0.55	-	-	1
2 to < 6 years	2.7	0.55	-	-	4	2.7	0.55	-	-	4
6 to < 11 years	2.7	0.55	-	-	5	2.7	0.55	-	-	5
11 to < 16 years	2.7	0.55	-	-	1	2.7	0.55	-	-	5
16 to < 21 years	2.7	0.55	-	-	0	2.7	0.55	-	-	5
Total Child	-	-	-	-	12	-	-	-	-	21
Adult	2.7	0.55	-	-	12	2.7	0.55	-	-	33

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion; CTE = central tendency exposure (typical); RME = reasonable maximum exposure (higher); yrs = years

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 9. Residential: Default exposure point concentrations for chronic exposure to isopropanol in air at 39.957467473249 µg/m³ (16 ppb)*

PHAST PUBLIC HEALTH ASSESSMENT SITE TOOL Exposure Group	CTE Adjusted EPC (µg/m³)	CTE Adjusted EPC (ppb)	CTE Noncancer Hazard Quotient	CTE Cancer Risk	CTE Exposure Duration (yrs)	RME Adjusted EPC (µg/m³)	RME Adjusted EPC (ppb)	RME Noncancer Hazard Quotient	RME Cancer Risk	RME Exposure Duration (yrs)
Birth to < 1 year	40	16	-	-	1	40	16	-	-	1
1 to < 2 years	40	16	-	-	1	40	16	-	-	1
2 to < 6 years	40	16	-	-	4	40	16	-	-	4
6 to < 11 years	40	16	-	-	5	40	16	-	-	5
11 to < 16 years	40	16	-	-	1	40	16	-	-	5
16 to < 21 years	40	16	-	-	0	40	16	-	-	5
Total Child	-	-	-	-	12	-	-	-	-	21
Adult	40	16	-	-	12	40	16	-	-	33

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion; CTE = central tendency exposure (typical); RME = reasonable maximum exposure (higher); yrs = years

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 10. Residential: Default exposure point concentrations for chronic exposure to n-pentane in air at 1.5897552708444 µg/m³ (0.54 ppb)*

PHAST PUBLIC HEALTH ASSESSMENT SITE TOOL Exposure Group	CTE Adjusted EPC (µg/m³)	CTE Adjusted EPC (ppb)	CTE Noncancer Hazard Quotient	CTE Cancer Risk	CTE Exposure Duration (yrs)	RME Adjusted EPC (µg/m³)	RME Adjusted EPC (ppb)	RME Noncancer Hazard Quotient	RME Cancer Risk	RME Exposure Duration (yrs)
Birth to < 1 year	1.6	0.54	-	-	1	1.6	0.54	-	-	1
1 to < 2 years	1.6	0.54	-	-	1	1.6	0.54	-	-	1
2 to < 6 years	1.6	0.54	-	-	4	1.6	0.54	-	-	4
6 to < 11 years	1.6	0.54	-	-	5	1.6	0.54	-	-	5
11 to < 16 years	1.6	0.54	-	-	1	1.6	0.54	-	-	5
16 to < 21 years	1.6	0.54	-	-	0	1.6	0.54	-	-	5
Total Child	-	-	-	-	12	-	-	-	-	21
Adult	1.6	0.54	-	-	12	1.6	0.54	-	-	33

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion; CTE = central tendency exposure (typical); RME = reasonable maximum exposure (higher); yrs = years

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 11. Residential: Default exposure point concentrations for chronic exposure to propylene in air at 0.239237234042553 µg/m³ (0.14 ppb)*

PHAST PUBLIC HEALTH ASSESSMENT SITE TOOL Exposure Group	CTE Adjusted EPC (µg/m³)	CTE Adjusted EPC (ppb)	CTE Noncancer Hazard Quotient	CTE Cancer Risk	CTE Exposure Duration (yrs)	RME Adjusted EPC (µg/m³)	RME Adjusted EPC (ppb)	RME Noncancer Hazard Quotient	RME Cancer Risk	RME Exposure Duration (yrs)
Birth to < 1 year	0.24	0.14	-	-	1	0.24	0.14	-	-	1
1 to < 2 years	0.24	0.14	-	-	1	0.24	0.14	-	-	1
2 to < 6 years	0.24	0.14	-	-	4	0.24	0.14	-	-	4
6 to < 11 years	0.24	0.14	-	-	5	0.24	0.14	-	-	5
11 to < 16 years	0.24	0.14	-	-	1	0.24	0.14	-	-	5
16 to < 21 years	0.24	0.14	-	-	0	0.24	0.14	-	-	5
Total Child	-	-	-	-	12	-	-	-	-	21
Adult	0.24	0.14	-	-	12	0.24	0.14	-	-	33

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion; CTE = central tendency exposure (typical); RME = reasonable maximum exposure (higher); yrs = years

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 12. Residential: Default exposure point concentrations for chronic exposure to trans-1,2-dichloroethene in air at 0.13 µg/m³ (0.033 ppb)*

PHAST PUBLIC HEALTH ASSESSMENT SITE TOOL Exposure Group	CTE Adjusted EPC (µg/m³)	CTE Adjusted EPC (ppb)	CTE Noncancer Hazard Quotient	CTE Cancer Risk	CTE Exposure Duration (yrs)	RME Adjusted EPC (µg/m³)	RME Adjusted EPC (ppb)	RME Noncancer Hazard Quotient	RME Cancer Risk	RME Exposure Duration (yrs)
Birth to < 1 year	0.13	0.033	-	-	1	0.13	0.033	-	-	1
1 to < 2 years	0.13	0.033	-	-	1	0.13	0.033	-	-	1
2 to < 6 years	0.13	0.033	-	-	4	0.13	0.033	-	-	4
6 to < 11 years	0.13	0.033	-	-	5	0.13	0.033	-	-	5
11 to < 16 years	0.13	0.033	-	-	1	0.13	0.033	-	-	5
16 to < 21 years	0.13	0.033	-	-	0	0.13	0.033	-	-	5
Total Child	-	-	-	-	12	-	-	-	-	21
Adult	0.13	0.033	-	-	12	0.13	0.033	-	-	33

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion; CTE = central tendency exposure (typical); RME = reasonable maximum exposure (higher); yrs = years

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Air Inhalation Intermediate (Default)

Acrolein

Table 13. Residential: Default exposure point concentrations for intermediate exposure to acrolein in air at 0.350001091107474 µg/m³ (0.15 ppb) along with noncancer hazard quotients*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	0.35	0.15	0.38
1 to < 2 years	0.35	0.15	0.38
2 to < 6 years	0.35	0.15	0.38
6 to < 11 years	0.35	0.15	0.38
11 to < 16 years	0.35	0.15	0.38
16 to < 21 years	0.35	0.15	0.38
Adult	0.35	0.15	0.38

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the intermediate (two weeks to less than 1 year) minimal risk level of 0.92 µg/m³.

Table 14. Residential: Default exposure point concentrations for intermediate exposure to acrylonitrile in air at 33 µg/m³ (15 ppb) along with noncancer hazard quotients*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	33	15	19 †
1 to < 2 years	33	15	19 †
2 to < 6 years	33	15	19 †
6 to < 11 years	33	15	19 †
11 to < 16 years	33	15	19 †
16 to < 21 years	33	15	19 †
Adult	33	15	19 †

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the intermediate (two weeks to less than 1 year) minimal risk level of 1.7 µg/m³.

† Indicates the hazard quotient is greater than 1, which ATSDR evaluates further.

Table 15. Residential: Default exposure point concentrations for intermediate exposure to benzene in air at 0.472127659574468 µg/m³ (0.15 ppb) along with noncancer hazard quotients*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	0.47	0.15	0.021
1 to < 2 years	0.47	0.15	0.021
2 to < 6 years	0.47	0.15	0.021
6 to < 11 years	0.47	0.15	0.021
11 to < 16 years	0.47	0.15	0.021
16 to < 21 years	0.47	0.15	0.021
Adult	0.47	0.15	0.021

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the intermediate (two weeks to less than 1 year) minimal risk level of 22 µg/m³.

Table 16. Residential: Default exposure point concentrations for intermediate exposure to carbon tetrachloride in air at 0.490212765957447 µg/m³ (0.078 ppb) along with noncancer hazard quotients*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	0.49	0.078	0.0026
1 to < 2 years	0.49	0.078	0.0026
2 to < 6 years	0.49	0.078	0.0026
6 to < 11 years	0.49	0.078	0.0026
11 to < 16 years	0.49	0.078	0.0026
16 to < 21 years	0.49	0.078	0.0026
Adult	0.49	0.078	0.0026

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the intermediate (two weeks to less than 1 year) minimal risk level of 190 µg/m³.

Table 17. Residential: Default exposure point concentrations for intermediate exposure to chloroform in air at 0.127483415284992 µg/m³ (0.026 ppb) along with noncancer hazard quotients*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	0.13	0.026	0.033
1 to < 2 years	0.13	0.026	0.033
2 to < 6 years	0.13	0.026	0.033
6 to < 11 years	0.13	0.026	0.033
11 to < 16 years	0.13	0.026	0.033
16 to < 21 years	0.13	0.026	0.033
Adult	0.13	0.026	0.033

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the intermediate (two weeks to less than 1 year) minimal risk level of 3.9 µg/m³.

Table 18. Residential: Default exposure point concentrations for intermediate exposure to ethyl acetate in air at 4.48334032892285 µg/m³ (1.2 ppb)*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	4.5	1.2	-
1 to < 2 years	4.5	1.2	-
2 to < 6 years	4.5	1.2	-
6 to < 11 years	4.5	1.2	-
11 to < 16 years	4.5	1.2	-
16 to < 21 years	4.5	1.2	-
Adult	4.5	1.2	-

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 19. Residential: Default exposure point concentrations for intermediate exposure to 1,1,2-trichloro-1,2,2-trifluoroethane in air at 0.473404255319149 µg/m³ (0.062 ppb)*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	0.47	0.062	-
1 to < 2 years	0.47	0.062	-
2 to < 6 years	0.47	0.062	-
6 to < 11 years	0.47	0.062	-
11 to < 16 years	0.47	0.062	-
16 to < 21 years	0.47	0.062	-
Adult	0.47	0.062	-

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 20. Residential: Default exposure point concentrations for intermediate exposure to dichlorodifluoromethane in air at 2.69574468085106 µg/m³ (0.55 ppb)*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	2.7	0.55	-
1 to < 2 years	2.7	0.55	-
2 to < 6 years	2.7	0.55	-
6 to < 11 years	2.7	0.55	-
11 to < 16 years	2.7	0.55	-
16 to < 21 years	2.7	0.55	-
Adult	2.7	0.55	-

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 21. Residential: Default exposure point concentrations for intermediate exposure to isopropanol in air at 39.957467473249 µg/m³ (16 ppb)*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	40	16	-
1 to < 2 years	40	16	-
2 to < 6 years	40	16	-
6 to < 11 years	40	16	-
11 to < 16 years	40	16	-
16 to < 21 years	40	16	-
Adult	40	16	-

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 22. Residential: Default exposure point concentrations for intermediate exposure to n-pentane in air at 1.5897552708444 µg/m³ (0.54 ppb)*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	1.6	0.54	-
1 to < 2 years	1.6	0.54	-
2 to < 6 years	1.6	0.54	-
6 to < 11 years	1.6	0.54	-
11 to < 16 years	1.6	0.54	-
16 to < 21 years	1.6	0.54	-
Adult	1.6	0.54	-

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 23. Residential: Default exposure point concentrations for intermediate exposure to propylene in air at 0.239237234042553 µg/m³ (0.14 ppb)*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	0.24	0.14	-
1 to < 2 years	0.24	0.14	-
2 to < 6 years	0.24	0.14	-
6 to < 11 years	0.24	0.14	-
11 to < 16 years	0.24	0.14	-
16 to < 21 years	0.24	0.14	-
Adult	0.24	0.14	-

Source: [list reference of environmental data]
Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion
* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 24. Residential: Default exposure point concentrations for intermediate exposure to trans-1,2-dichloroethene in air at 0.13 µg/m³ (0.033 ppb)*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	0.13	0.033	-
1 to < 2 years	0.13	0.033	-
2 to < 6 years	0.13	0.033	-
6 to < 11 years	0.13	0.033	-
11 to < 16 years	0.13	0.033	-
16 to < 21 years	0.13	0.033	-
Adult	0.13	0.033	-

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Air Inhalation Acute (Default)

Acrolein

Table 25. Residential: Default exposure point concentrations for acute exposure to acrolein in air at 0.350001091107474 µg/m³ (0.15 ppb) along with noncancer hazard quotients*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	0.35	0.15	0.051
1 to < 2 years	0.35	0.15	0.051
2 to < 6 years	0.35	0.15	0.051
6 to < 11 years	0.35	0.15	0.051
11 to < 16 years	0.35	0.15	0.051
16 to < 21 years	0.35	0.15	0.051
Adult	0.35	0.15	0.051

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the acute (less than two weeks) minimal risk level of 6.9 µg/m³ . The standard exposure factor rule does not apply to this chemical.

Table 26. Residential: Default exposure point concentrations for acute exposure to acrylonitrile in air at 33 µg/m³ (15 ppb)*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	33	15	-
1 to < 2 years	33	15	-
2 to < 6 years	33	15	-
6 to < 11 years	33	15	-
11 to < 16 years	33	15	-
16 to < 21 years	33	15	-
Adult	33	15	-

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 27. Residential: Default exposure point concentrations for acute exposure to benzene in air at 0.472127659574468 µg/m³ (0.15 ppb) along with noncancer hazard quotients*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	0.47	0.15	0.016
1 to < 2 years	0.47	0.15	0.016
2 to < 6 years	0.47	0.15	0.016
6 to < 11 years	0.47	0.15	0.016
11 to < 16 years	0.47	0.15	0.016
16 to < 21 years	0.47	0.15	0.016
Adult	0.47	0.15	0.016

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the acute (less than two weeks) minimal risk level of 29 µg/m³.

Table 28. Residential: Default exposure point concentrations for acute exposure to carbon tetrachloride in air at 0.490212765957447 µg/m³ (0.078 ppb)*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	0.49	0.078	-
1 to < 2 years	0.49	0.078	-
2 to < 6 years	0.49	0.078	-
6 to < 11 years	0.49	0.078	-
11 to < 16 years	0.49	0.078	-
16 to < 21 years	0.49	0.078	-
Adult	0.49	0.078	-

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 29. Residential: Default exposure point concentrations for acute exposure to chloroform in air at 0.127483415284992 µg/m³ (0.026 ppb) along with noncancer hazard quotients*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	0.13	0.026	0.026
1 to < 2 years	0.13	0.026	0.026
2 to < 6 years	0.13	0.026	0.026
6 to < 11 years	0.13	0.026	0.026
11 to < 16 years	0.13	0.026	0.026
16 to < 21 years	0.13	0.026	0.026
Adult	0.13	0.026	0.026

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the acute (less than two weeks) minimal risk level of 4.9 µg/m³.

Table 30. Residential: Default exposure point concentrations for acute exposure to ethyl acetate in air at 4.48334032892285 µg/m³ (1.2 ppb)*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	4.5	1.2	-
1 to < 2 years	4.5	1.2	-
2 to < 6 years	4.5	1.2	-
6 to < 11 years	4.5	1.2	-
11 to < 16 years	4.5	1.2	-
16 to < 21 years	4.5	1.2	-
Adult	4.5	1.2	-

Source: [list reference of environmental data]
Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion
* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 31. Residential: Default exposure point concentrations for acute exposure to 1,1,2-trichloro-1,2,2-trifluoroethane in air at 0.473404255319149 µg/m³ (0.062 ppb)*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	0.47	0.062	-
1 to < 2 years	0.47	0.062	-
2 to < 6 years	0.47	0.062	-
6 to < 11 years	0.47	0.062	-
11 to < 16 years	0.47	0.062	-
16 to < 21 years	0.47	0.062	-
Adult	0.47	0.062	-

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 32. Residential: Default exposure point concentrations for acute exposure to dichlorodifluoromethane in air at 2.69574468085106 µg/m³ (0.55 ppb)*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	2.7	0.55	-
1 to < 2 years	2.7	0.55	-
2 to < 6 years	2.7	0.55	-
6 to < 11 years	2.7	0.55	-
11 to < 16 years	2.7	0.55	-
16 to < 21 years	2.7	0.55	-
Adult	2.7	0.55	-

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 33. Residential: Default exposure point concentrations for acute exposure to isopropanol in air at 39.957467473249 µg/m³ (16 ppb)*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	40	16	-
1 to < 2 years	40	16	-
2 to < 6 years	40	16	-
6 to < 11 years	40	16	-
11 to < 16 years	40	16	-
16 to < 21 years	40	16	-
Adult	40	16	-

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Pentane, n-

Table 34. Residential: Default exposure point concentrations for acute exposure to n-pentane in air at 1.5897552708444 µg/m³ (0.54 ppb)*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	1.6	0.54	-
1 to < 2 years	1.6	0.54	-
2 to < 6 years	1.6	0.54	-
6 to < 11 years	1.6	0.54	-
11 to < 16 years	1.6	0.54	-
16 to < 21 years	1.6	0.54	-
Adult	1.6	0.54	-

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 35. Residential: Default exposure point concentrations for acute exposure to propylene in air at 0.239237234042553 µg/m³ (0.14 ppb)*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	0.24	0.14	-
1 to < 2 years	0.24	0.14	-
2 to < 6 years	0.24	0.14	-
6 to < 11 years	0.24	0.14	-
11 to < 16 years	0.24	0.14	-
16 to < 21 years	0.24	0.14	-
Adult	0.24	0.14	-

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0.

Table 36. Residential: Default exposure point concentrations for acute exposure to trans-1,2-dichloroethene in air at 0.13 µg/m³ (0.033 ppb) along with noncancer hazard quotients*

Exposure Group	Adjusted EPC (µg/m³)	Adjusted EPC (ppb)	Noncancer Hazard Quotient
Birth to < 1 year	0.13	0.033	1.1E-5
1 to < 2 years	0.13	0.033	1.1E-5
2 to < 6 years	0.13	0.033	1.1E-5
6 to < 11 years	0.13	0.033	1.1E-5
11 to < 16 years	0.13	0.033	1.1E-5
16 to < 21 years	0.13	0.033	1.1E-5
Adult	0.13	0.033	1.1E-5

Source: [list reference of environmental data]

Abbreviations: adjusted EPC = the exposure point concentration (EPC) times the appropriate exposure factors; µg/m³ = micrograms per meter cubed; ppb = parts per billion

* The calculations in this table were generated using ATSDR's PHAST v2.6.0.0. The noncancer hazard quotients were calculated using the acute (less than two weeks) minimal risk level of 12000 µg/m³ . The standard exposure factor rule does not apply to this chemical.

Default Input Parameters and Equations
PHAST Report, v2.6.0.0, August 29, 2025

Equations

Air Inhalation Exposure Equation

Adjusted EPC = EPC x $EF_{noncancer}$ **Equation 1**

EPC = exposure point concentration, $EF_{noncancer}$ = exposure factor (unitless)

Hazard Quotient

HQ = Adjusted EPC ÷ HG **Equation 2**

HQ = hazard quotient, EPC = exposure point concentration (µg/m^3 or ppb), HG = health guideline (e.g., inhalation MRL, RfC)

Cancer Risk Equations

CR = (Adjusted EPC x IUR) x (ED ÷ LY) for each exposure group **Equation 3**

ADAF-adjusted CR = (Adjusted EPC x IUR) x (ED ÷ LY) x ADAF for each exposure group **Equation 4**

Total CR = Sum of the CR for all exposure groups **Equation 5**

CR = cancer risk (unitless), EPC = exposure point concentration (µg/m^3 or ppb), IUR = inhalation unit risk ((µg/m^3 or ppb)$^{-1}$), ED = exposure duration (years), LY = lifetime years (78 years), ADAF = age-dependent adjustment factor (unitless), EF (cancer) = exposure factor (cancer) calculated as follows: EF (noncancer; unitless) x exposure group specific exposure duration (years) ÷ lifetime of 78 years

Default Exposure Factors

Duration Category	Hours per Day	Days per Week	Weeks per Year	Years	Exposure Group Specific EF $_{noncancer}$	Exposure Group Specific* EF $_{cancer}$
Acute	24	-	-	-	1	-
Intermediate	24	7	-	-	1	-
Chronic	24	7	52.14	See exposure group specific exposure durations	1	= $EF_{noncancer}$ x ($ED_{age\text{-}specific\ (yrs)}$ ÷ 78 years)

Abbreviations: EF = exposure factor; NC = not calculated

Cancer EFs are not shown in the table because they are calculated using age-specific durations. The general formula is $EF_{cancer} = EF_{noncancer}$ x ($ED_{age\text{-}specific\ (yrs)}$ ÷ 78 years).

Contaminant Information

Contaminant Name	Entered Concentration	EPC Type	Converted Concentration (µg/m³)	Converted Concentration (ppb)
Acrolein	0.350001091107474 µg/m³	95% UCL of the mean	0.35	0.15
Acrylonitrile	33 µg/m³	Maximum	33	15
Benzene	0.472127659574468 µg/m³	95% UCL of the mean	0.47	0.15
Carbon tetrachloride	0.490212765957447 µg/m³	95% UCL of the mean	0.49	0.078
Chloroform	0.127483415284992 µg/m³	95% UCL of the mean	0.13	0.026
Ethyl acetate	4.48334032892285 µg/m³	95% UCL of the mean	4.5	1.2
1,1,2-trichloro-1,2,2-trifluoroethane	0.473404255319149 µg/m³	95% UCL of the mean	0.47	0.062
Dichlorodifluoromethane	2.69574468085106 µg/m³	95% UCL of the mean	2.7	0.55
Isopropanol	39.957467473249 µg/m³	95% UCL of the mean	40	16
Pentane, n-	1.5897552708444 µg/m³	95% UCL of the mean	1.6	0.54
Propylene	0.239237234042553 µg/m³	95% UCL of the mean	0.24	0.14
1,2-dichloroethene, trans-	0.13 µg/m³	Maximum	0.13	0.033

Abbreviations: µg/m³ = micrograms per meter cubed; EPC = exposure point concentration; UCL = upper confidence limit

Appendix B: Arkansas Central Cancer Registry Investigation- Washington County Cancer Report

Washington County Cancer Report

The Arkansas Central Cancer Registry (ACCR) at the Arkansas Department of Health (ADH) is a population-based registry that collects and manages reports of cancer cases from hospitals and other facilities that diagnose or treat cancer in the state.

ACCR does not collect information on personal behaviors or environmental exposures that may affect cancer risk. However, research shows that several common factors can influence the risk of developing cancer. These include tobacco use, diet, excess body weight, alcohol use, too much sun exposure, and physical inactivity. Risk also increases with factors that cannot be controlled, such as age.

In 2025, the ACCR was asked to review cancer data for Washington county. Following the ADH's Guidelines for Examining Unusual Patterns of Chronic Disease and Environmental Concerns, ACCR analyzed cancer cases by cancer type from 2009 through 2023 in five-year intervals.[1] These data are referenced in Appendix A of this document. *Note: Data for 2023 are considered preliminary. To protect privacy, cancer sites with fewer than 10 cases are not shown.*

How does ADH calculate an excess of cancer?

The ADH uses a method called the Standardized Incidence Ratio (SIR) that divides the number of cancer cases in an area (the observed cases) by the number of cases that would be expected based on statewide cancer rates (the expected cases). This helps determine whether cancer occurs more or less often in a specific area compared to the state overall.

In this report, SIRs for Benton and Pulaski Counties were provided for context, as Benton County is adjacent to the area of concern, and both have an urban population in a largely rural state. It is common for urban populations to have higher rates of cancer due to increased access to screenings.

How do you interpret the SIR?

- SIR equal to 1 means that the number of observed cases is similar to the state average.
- SIR greater than 1 means there are more cases of cancer than expected.
- SIR less than 1 means there are fewer cases of cancer than expected.
- Confidence intervals (CI) show how reliable the SIR estimate is. A wider range means there is less certainty about the result, while a narrow range means there is more confidence in the number.

How is it decided if an epidemiologic study is needed?

Cancer can develop from many factors, including genetics, lifestyle, and the length of time it takes for cancer to develop between an exposure and the onset of disease. Because of these factors, it is challenging for ACCR to identify a single cause of cancer in a community, especially when accounting for differences in screening and access to care.

When a chemical or exposure increases cancer risk, it's easier to notice that pattern in the data. Smaller increases, however, can be harder to detect because other factors also influence cancer risk.[3,4]

What are the limitations of this investigation?

This investigation describes the number of cancer cases in Washington County and Benton County. It is important to keep in mind that there are limits to this information and to the cancer data used in the analysis, including:

- Cancer is a multifactorial disease with several different risk factors (for example, the risk factors for breast cancer include (but not limited to) age, genetics, family history, personal history, race and ethnicity, menstrual history, hormone use, obesity, and breast density. Similarly, the risk factors for skin cancer include (but not limited to) exposure to UV radiation from sun or tanning beds, fair skin, a family history of skin cancer, and presence of large moles. Our analysis does not account for all the risk factors for any given cancer assessed.
- Residential history and work data are limited. Cancer registry records typically include only a person's residence at the time of diagnosis, not their previous residences or places of work. Because many cancers take years to develop, past residence and exposure history are important but often unavailable.
- Cancer rates alone cannot prove cause and effect. Higher cancer rates in a community do not necessarily mean that living near a chemical or environmental concern caused the disease. This investigation used surveillance data grouped by cancer type and cannot directly show whether cancers are linked to environmental exposures.
- Small populations make results less precise. When data are analyzed for smaller areas, such as cities or ZIP codes, the small number of cases can make the results less reliable. For this reason, cancer investigations are conducted only at the county level.
- Reported cancer rates may be higher in areas where there is more access to care, for example breast cancer screenings.

What are the results of the investigation?

Cancer is an umbrella term that includes more than 100 different diseases, each with its own set of risk factors. These factors—such as age, sex, race or ethnicity, and lifestyle—can increase the chance of developing cancer, but they do not always cause it directly.

From 2009 to 2023, the number of cancer cases for all combined cancer types was lower than expected for Washington and Benton counties for each five-year period.

- The SIR for all combined cancer types for Washington County between 2019 and 2023 was 0.87, indicating 13% fewer cancers than expected (Appendix A, Table 1).
- When evaluating cancer types separately, the SIR for breast cancer was consistently above 1.0 in Washington County, which means the number of people diagnosed with breast cancer was higher than what was expected. Between 2014 and 2018, the SIR in Washington County was 1.15, which means that there were about 15% more cases of breast cancer than what was expected (Appendix A, Table 2).

Based on the results of this investigation, no further action is needed.

Questions regarding this report should be directed to adh.communications@arkansas.gov.

References

1. Arkansas Department of Health. Arkansas - Guidelines for Examining Unusual Patterns of Chronic Disease and Environmental Concerns. Published online 2025. https://healthy.arkansas.gov/wp-content/uploads/FINAL_ADH-Chronic-Disease-Pattern-Examination-Protocol.pdf

2. Centers for Disease Control and Prevention. Standardized Incidence Ratio (SIR) - Fact Sheet. Published online 2022. https://www.cdc.gov/cancer-environment/media/pdfs/Standardized-Incidence-Ratio-Fact-Sheet-508.pdf

3. Chen H, Cohen P, Chen S. How Big is a Big Odds Ratio? Interpreting the Magnitudes of Odds Ratios in Epidemiological Studies. *Communications in Statistics - Simulation and Computation*. 2010;39(4):860-864. doi:10.1080/03610911003650383

4. Ferguson CJ. An effect size primer: A guide for clinicians and researchers. *Professional Psychology: Research and Practice*. 2009;40(5):532-538. doi:10.1037/a0015808

Appendix A

Table 1. Standardized Incidence Ratio (SIR) by County, Arkansas, 2019 – 2023

	Washington County					Benton County					Pulaski County				
	Observed cases	Expected cases	SIR	95% CI		Observed cases	Expected cases	SIR	95% CI		Observed cases	Expected cases	SIR	95% CI	
All Malignant and Non-Malignant	5,558	6,360	0.87	0.85	0.90	7,896	8,186	0.96	0.94	0.99	13,193	12,470	1.06	1.04	1.08
Combined	4,098	4,591	0.89	0.89	0.89	5,904	5,924	1.00	0.97	1.02	9,520	9,065	1.05	1.03	1.07
Brain and spinal-related tumors	187	241	0.78	0.67	0.89	329	306	1.08	0.96	1.19	546	451	1.21	1.11	1.31
Bones and joint	*	13	0.69	0.31	1.22	15	15	1.00	0.56	1.57	21	22	0.95	0.59	1.41
Breast	1,088	964	1.13	1.06	1.20	1,384	1,230	1.13	1.07	1.19	2,207	1,927	1.15	1.10	1.19
Colon	340	360	0.94	0.85	1.05	399	466	0.86	0.77	0.94	642	712	0.90	0.83	0.97
Kidney	209	275	0.76	0.66	0.87	345	354	0.97	0.87	1.08	484	534	0.91	0.83	0.99
Leukemia	118	160	0.74	0.61	0.88	188	204	0.92	0.79	1.06	311	307	1.01	0.90	1.13
Liver	81	93	0.87	0.69	1.07	113	120	0.94	0.78	1.12	201	189	1.06	0.92	1.22
Lung and bronchus	599	847	0.71	0.65	0.76	822	589	1.40	1.30	1.49	1,514	1,727	0.88	0.83	0.92
Lymphoma	212	245	0.87	0.75	0.99	293	310	0.95	0.84	1.06	498	468	1.06	0.97	1.16
Prostate	572	683	0.84	0.77	0.91	803	890	0.90	0.84	0.97	1,731	1,338	1.29	1.23	1.36
Skin	480	482	1.00	0.91	1.09	873	622	1.40	1.31	1.50	965	938	1.03	0.96	1.09
Bladder	203	225	0.90	0.78	1.03	340	295	1.15	1.03	1.28	400	462	0.87	0.78	0.95

* To protect privacy, cancer sites with fewer than 10 cases are not shown.

Source: Arkansas Central Cancer Registry data retrieved 10/03/2025.

Appendix A

Table 2. Standardized Incidence Ratio (SIR) by County, Arkansas, 2014-2018

	Washington County					Benton County					Pulaski County				
	Observed cases	Expected cases	SIR	95% CI		Observed cases	Expected cases	SIR	95% CI		Observed cases	Expected cases	SIR	95% CI	
All Malignant and Non-Malignant	5,535	5,653	0.98	0.95	1.01	6,869	7,176	0.96	0.93	0.98	12,369	12,018	1.03	1.01	1.05
Combined	4,046	4,098	0.99	0.99	1.02	5,086	5,219	0.97	0.95	1.00	8,939	8,765	1.02	1.00	1.04
Brain and spinal-related tumors	154	203	0.76	0.64	0.88	214	252	0.85	0.74	0.97	539	408	1.32	1.21	1.43
Bones and joint	16	13	1.23	0.70	1.91	14	15	0.93	0.51	1.49	17	23	0.74	0.43	1.13
Breast	947	824	1.15	1.08	1.22	1,210	1,042	1.16	1.10	1.23	1,832	1,796	1.02	0.97	1.07
Colon	313	336	0.93	0.83	1.04	377	430	0.88	0.79	0.97	619	722	0.86	0.79	0.93
Kidney	204	230	0.89	0.77	1.01	246	292	0.84	0.74	0.95	450	485	0.93	0.84	1.02
Leukemia	160	152	1.05	0.90	1.22	166	191	0.87	0.74	1.01	322	314	1.03	0.92	1.14
Liver	61	77	0.79	0.61	1.00	71	98	0.72	0.57	0.90	178	168	1.06	0.91	1.22
Lung and bronchus	663	811	0.82	0.76	0.88	823	1,047	0.79	0.73	0.84	1,503	1,778	0.85	0.80	0.89
Lymphoma	218	220	0.99	0.86	1.13	257	277	0.93	0.82	1.04	472	456	1.04	0.94	1.13
Prostate	550	609	0.90	0.83	0.98	694	779	0.89	0.83	0.96	1,716	1,296	1.32	1.26	1.39
Skin	533	415	1.28	1.18	1.40	728	528	1.38	1.28	1.48	902	878	1.03	0.96	1.10
Bladder	227	203	1.12	0.98	1.27	286	265	1.08	0.96	1.21	389	449	0.87	0.78	0.95

Source: Arkansas Central Cancer Registry data retrieved 10/03/2025.

Appendix A

Table 3. Standardized Incidence Ratio (SIR) by County, Arkansas, 2009-2013

	Washington County					Benton County					Pulaski County				
	Observed cases	Expected cases	SIR	95% CI		Observed cases	Expected cases	SIR	95% CI		Observed cases	Expected cases	SIR	95% CI	
Malignant and non-malignant	4,460	4,542	0.98	0.95	1.01	5,468	5,719	0.96	0.93	0.98	11,345	10,290	1.10	1.08	1.12
Combined	3,342	3,322	1.01	0.97	1.04	4,049	4,202	0.96	0.93	0.99	8,384	7,560	1.11	1.09	1.13
Brain and spinal-related tumors	127	160	0.79	0.66	0.94	175	191	0.92	0.79	1.06	443	338	1.31	1.19	1.44
Bones and joint	13	10	1.30	0.69	2.10	*	11	0.64	0.25	1.20	19	19	1.00	0.60	1.50
Breast	746	676	1.10	1.03	1.18	894	848	1.05	0.99	1.12	1,865	1,580	1.18	1.13	1.23
Colon	251	282	0.89	0.78	1.00	324	362	0.90	0.80	1.00	607	649	0.94	0.86	1.01
Kidney	132	159	0.83	0.69	0.98	171	199	0.86	0.74	0.99	382	358	1.07	0.96	1.18
Leukemia	89	107	0.83	0.67	1.01	119	132	0.90	0.75	1.07	277	232	1.19	1.06	1.34
Liver	50	55	0.89	0.66	1.16	56	69	0.81	0.61	1.04	158	129	1.22	1.04	1.42
Lung and bronchus	593	687	0.86	0.80	0.93	651	887	0.73	0.68	0.79	1,388	1,598	0.87	0.82	0.91
Lymphoma	173	190	0.91	0.78	1.05	199	235	0.85	0.73	0.97	468	419	1.12	1.02	1.22
Prostate	533	549	0.97	0.89	1.06	690	706	0.98	0.91	1.05	1,695	1,228	1.38	1.32	1.45
Skin	447	280	1.60	1.45	1.75	510	350	1.46	1.33	1.59	716	623	1.15	1.07	1.24
Bladder	188	171	1.10	0.95	1.26	253	223	1.13	1.00	1.28	366	397	0.92	0.83	1.02

* To protect privacy, cancer sites with fewer than 10 cases are not shown.

Source: Arkansas Central Cancer Registry data retrieved 10/03/2025.