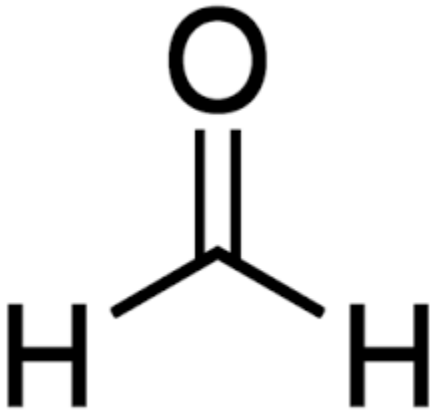
United States
Environmental Protection Agency

March 2024
Office of Chemical Safety and
Pollution Prevention

Draft Environmental Exposure Assessment for Formaldehyde

CASRN 50-00-0



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Key Points: Environmental Exposure Assessment for Formaldehyde

This document considers (1) physical and chemical properties as well as fate and transport characteristics, (2) measured formaldehyde concentrations in different media, and (3) modeled formaldehyde concentrations in air. The following bullets summarize the key points of this draft environmental exposure assessment:

- Environmental exposures to formaldehyde in the aquatic environment are not expected. Fate and transport characteristics as well as a lack of monitoring data identifying formaldehyde in water.
- Environmental exposures to formaldehyde in soils and other land media are also not expected for terrestrial organisms. Fate and transport characteristics as well as a lack of monitoring data identifying formaldehyde in water.
- Exposures to formaldehyde in air are expected for terrestrial organisms.
    - Modeled formaldehyde concentrations in ambient air range from 0.0001 to 50.5 µg/m^3.
        - The highest modeled concentrations were from ambient air releases of formaldehyde from the paper product manufacturing industry as well as the nonmetallic mineral product manufacturing sector.
        - The lowest modeled concentrations were from ambient air releases of formaldehyde from rubber product manufacturing industry, mining (except oil and gas) and supporting activities, and industrial gas manufacturing.
    - Monitored formaldehyde concentrations in ambient air have ranged from 0.00012 to 60.1 µg/m^3.

EXECUTIVE SUMMARY

Formaldehyde is undergoing the Toxic Substance Control Act (TSCA) risk evaluation process and the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) risk assessment process. This document provides the environmental exposures of formaldehyde for aquatic and terrestrial organisms. EPA reviewed all reasonably available information to support its conclusions and characterize environmental exposures to formaldehyde.

Based on the available evidence on formaldehyde's physical chemical properties and lack of supporting monitoring concentrations in surface water, there is no expected environmental exposures to formaldehyde. Therefore, a quantitative assessment of formaldehyde environmental exposures was not performed for surface water. Similarly, formaldehyde is not expected to persist in soils and other land-based media. Monitoring data, or lack thereof, support this conclusion.

However, EPA determined that while exposure via inhalation of soil or dust to terrestrial organisms is not expected to occur, exposure of terrestrial species to gaseous formaldehyde via the ambient air pathway-inhalation route may occur. Therefore, a qualitative assessment of terrestrial exposures from nearby air releases was presented for organisms with relatively short home ranges in proximity to the point of formaldehyde ambient air release for relevant TSCA conditions of use (COU). EPA utilized the peer-reviewed Integrated Indoor-Outdoor Air Calculator model to estimate formaldehyde concentrations at three pre-defined distances from releasing facilities. It compared such modeled estimates to ambient air monitoring data from EPA's Ambient Monitoring Technology Information Center from 2015 to 2020 (EPA, 2022a).

The highest modeled formaldehyde outdoor air concentration associated with a specific TSCA COU was 50.5 µg/m^3. Comparatively, concentrations in ambient air have been measured up to 60.1 µg/m^3 ((EPA, 2024a))—approximately 10 µg/m^3 higher than the highest modeled estimate resulting from a TSCA COU-based ambient air release. Hence, the modeled estimates of formaldehyde concentrations are well within the range of outdoor air monitoring concentrations.

1 INTRODUCTION

1.1 Risk Evaluation Scope

The TSCA risk evaluation of formaldehyde comprises several human health and environmental assessment modules and two risk assessment documents—the environmental risk assessment and the human health risk assessment. A basic diagram showing the layout of these modular assessments and their relationships is provided in Figure 1-1. This draft environmental exposure assessment is shaded blue. In some cases, modular assessments were completed jointly under Toxic Substances Control Act (TSCA) and the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). These modules are shown in dark gray.

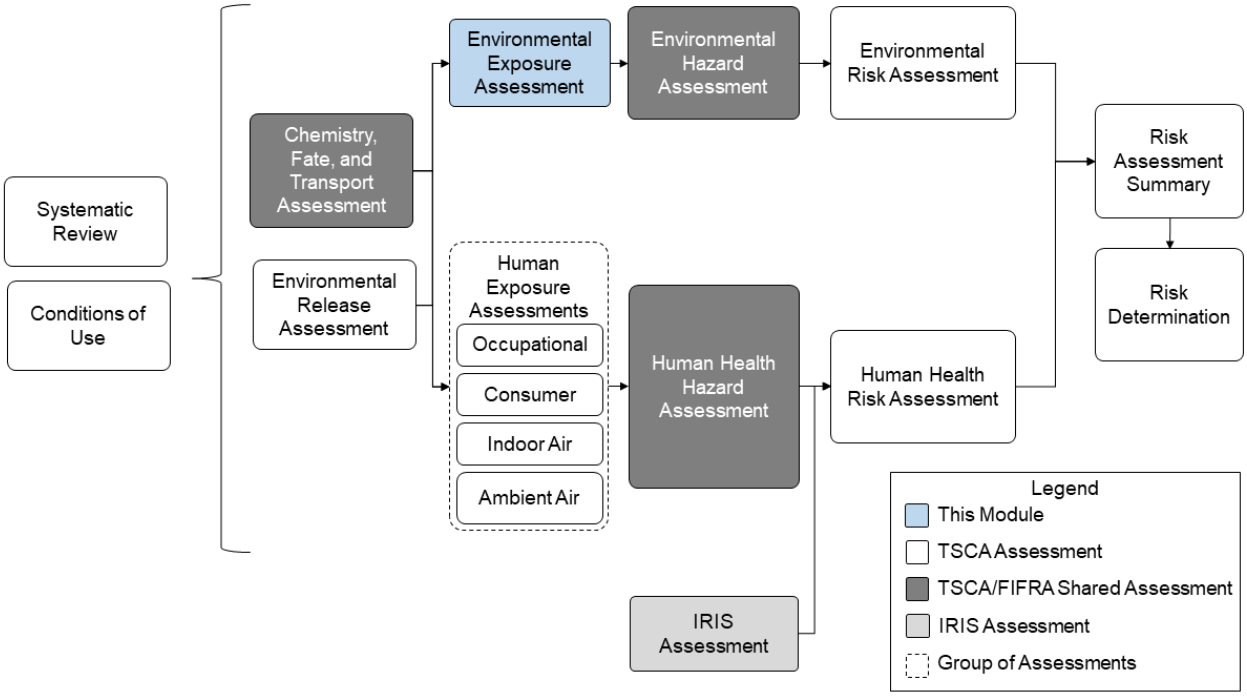

Figure 1-1. Risk Evaluation Document Summary Map

1.2 Sources Releasing Formaldehyde into the Environment

Formaldehyde is found in the environment mainly due to the combustion of organic materials and biogenic and anthropogenic processes and releases (IPCS, 2002; ATSDR, 1999). In most living organisms, formaldehyde is present as a metabolic intermediate and is emitted by a wide variety of organisms, including plankton, algae, and bacteria (IPCS, 2002).

Anthropogenic sources of formaldehyde in the environment include offgassing from building materials, industrial uses, and combustion of fuels—although formaldehyde is not present in gasoline (IPCS, 2002). Environmental releases of formaldehyde from anthropogenic sources are summarized in the environmental release assessment for formaldehyde (EPA, 2024e) from multiple databases. Per the environmental release assessment, formaldehyde is released directly to air as reported to the Toxics Release Inventory (TRI) (EPA, 2023) and National Emissions Inventory (NEI) (EPA, 2019); to land as reported to the TRI; and to water as reported to TRI and the Discharge Monitoring Report (DMR) (EPA, 2020).

Environmental releases are categorized by industry sector and mapped to TSCA conditions of use (TSCA COUs) in the *Draft Environmental Release Assessment for Formaldehyde* (environmental release assessment module) (EPA, 2024e). Figure 3-1 of the *Draft Chemistry, Fate, and Transport Assessment for Formaldehyde* (chemistry, fate, and transport assessment module) provides a conceptual diagram of the expected transport and partitioning of anthropogenic sources of formaldehyde and abiotic transformations in the environment (EPA, 2024b).

2 EXPOSURES TO ENVIRONMENTAL ORGANISMS

2.1 Terrestrial Exposure

Due to the various sources of formaldehyde in ambient air, various terrestrial organisms may be exposed to formaldehyde including plants, birds, and mammals. For terrestrial organisms, the primary source of formaldehyde exposure is expected to be ambient air as noted in the *Draft Environmental Risk Assessment for Formaldehyde* (EPA, 2024f). A typical terrestrial formaldehyde exposure scenario might involve a fugitive or stack formaldehyde release to ambient air from a TSCA COU that is inhaled or absorbed from air by terrestrial organisms located in proximity to the release facility. Many terrestrial organisms, including birds, are transient in the environment. As such, the exposure scenario is most applicable to local and non-transient organisms such as plants.

While plants may uptake formaldehyde via air and land and although a few experimental studies of plants exposed to formaldehyde in air chambers have shown potential hazardous effects, per the *Draft Environmental Hazard Assessment for Formaldehyde* (EPA, 2024d), these highly controlled studies may not represent expected environmental conditions relevant to terrestrial organisms because (1) such studies may not be accounting for varying weather conditions that may increase or decrease formaldehyde air concentrations, and (2) the studies may not account for the amount and magnitude of releases that actually occur. Nonetheless, based on the available information, nonmigratory terrestrial organisms such as plants or small vertebrates with relatively small home ranges (*e.g.*, house mice, moles, pets) may be exposed to formaldehyde air concentrations due to TSCA facility air releases.

EPA considered ambient air releases reported by industry (Section 2.1.1), ambient air monitoring (Section 2.1.2), and performed air modeling of the reported air releases (Section 2.1.3) to qualitatively assess terrestrial organism exposures to formaldehyde in ambient air.

2.1.1 Ambient Air Releases

Ambient air is defined at 40 CFR 50.1(e) as "that portion of the atmosphere, external to buildings, to which the general public has access." Although outdoor air is often referred to as ambient air, the terminology used in this draft assessment is ambient air to maintain consistency with the regulatory definition. While the definition of ambient air refers to the general public, it also includes the atmosphere to which animal and plant species have access.

EPA identified more than 150,000 reported releases of formaldehyde from stationary sources to the ambient air across both databases (TRI and NEI) considered in this assessment (environmental release assessment (EPA, 2024e)). Releases are reported to TRI annually (EPA, 2023) and releases are reported to NEI approximately every 3 years (EPA, 2019). Releases to the ambient air in both databases are reported for two release types: stack and fugitive.

EPA considered 6 years of TRI reported releases for this assessment (2016 through 2021). The Agency also relied upon releases reported via TRI Form R in this assessment as those are actual reported releases. Total reported fugitive releases of formaldehyde from all reporting sites in TRI ranged from 150,467 to 183,133 kg per year (kg/yr) across the years considered and total reported stack releases from all reporting facilities in TRI ranged from 1,939,308 to 2,222,605 kg/yr U.S. EPA, 2023, 11204097}. EPA considered 1 year of NEI reported releases (2017) for this assessment. NEI captured more formaldehyde releasing facilities than TRI based on different reporting threshold requirements and additional industry sectors not captured by TRI. Based on the 2017 NEI, total reported fugitive releases

of formaldehyde were 7,568,972 kg/yr and total reported stack releases from all reporting facilities were 17,869,243 kg/yr (EPA, 2019).

2.1.2 Ambient Air Monitoring

EPA considered a total of 306,529 samples from the Ambient Monitoring Technology Information Center (AMTIC) database (EPA, 2024a). The Agency computed summary statistics for all samples, as well as samples by state, census tract, monitoring site, monitoring site and year, and monitoring site and year and quarter. Sample collection durations ranged from 5 minutes to 24 hours using one of five approved collection methods. No data was omitted based on collection duration or method. Entries with concentrations reported below the self-reported limit of detection or contained invalid concentration data (*i.e.*, NULL, NA) were omitted from the final dataset. Formaldehyde concentrations were converted to µg/m^3 for consistency across sample analysis methods but were not otherwise normalized by sample collection duration or methodology. EPA used the overall statistics across all samples to characterize exposures, derive risk estimates, and characterize risks to the general population (see Table 2-1). Histograms and summary statistics of annual data are shown in Figure 2-1.

Table 2-1. Overall Monitored Method Detection Limits (MDL) of Formaldehyde from AMTIC Dataset (2015 to 2020)

Monitored Concentration Statistics (µg/m^3)							
Group	**Entry Count**	**Minimum**	**Non-zero Minimum**	**Median**	**Mean**	**Standard Deviation**	**Maximum**
Grouped by: all samples							
All	233,961	0	0.00012	1.6	2.1	2.2	60
Grouped by: collection duration description							
12 Hours	340	0.50	0.50	3.6	3.8	1.7	9.0
24 Hours	39,288	0	0.0015	2.3	2.8	2.1	60
3 Hours	5,870	0	0.0083	3.7	4.4	3.3	45
5 Minutes	184,307	0	0.00012	1.3	1.8	2.0	49
6 Hours	1	3.4	3.4	3.4	3.4	–	3.4
8 Hours	4,155	0.0055	0.0055	3.6	4.1	2.8	24
Grouped by: collection method description							
6-L Pressurized Canister	67	3.5	3.5	11	14	7.9	42
Cartridge Dnph On Silica, Heated O3 Denuder	6,671	0	0.020	2.3	2.7	1.8	46
Cartridge-Dnph-On-Silica	10,115	0	0.024	3.1	3.7	2.6	60
Fluxsense	184,307	0	0.00012	1.3	1.8	2.0	49
Silica-Dnph-Cart-Ki O3 Scrub	32,801	0	0.0015	2.5	3.0	2.3	45

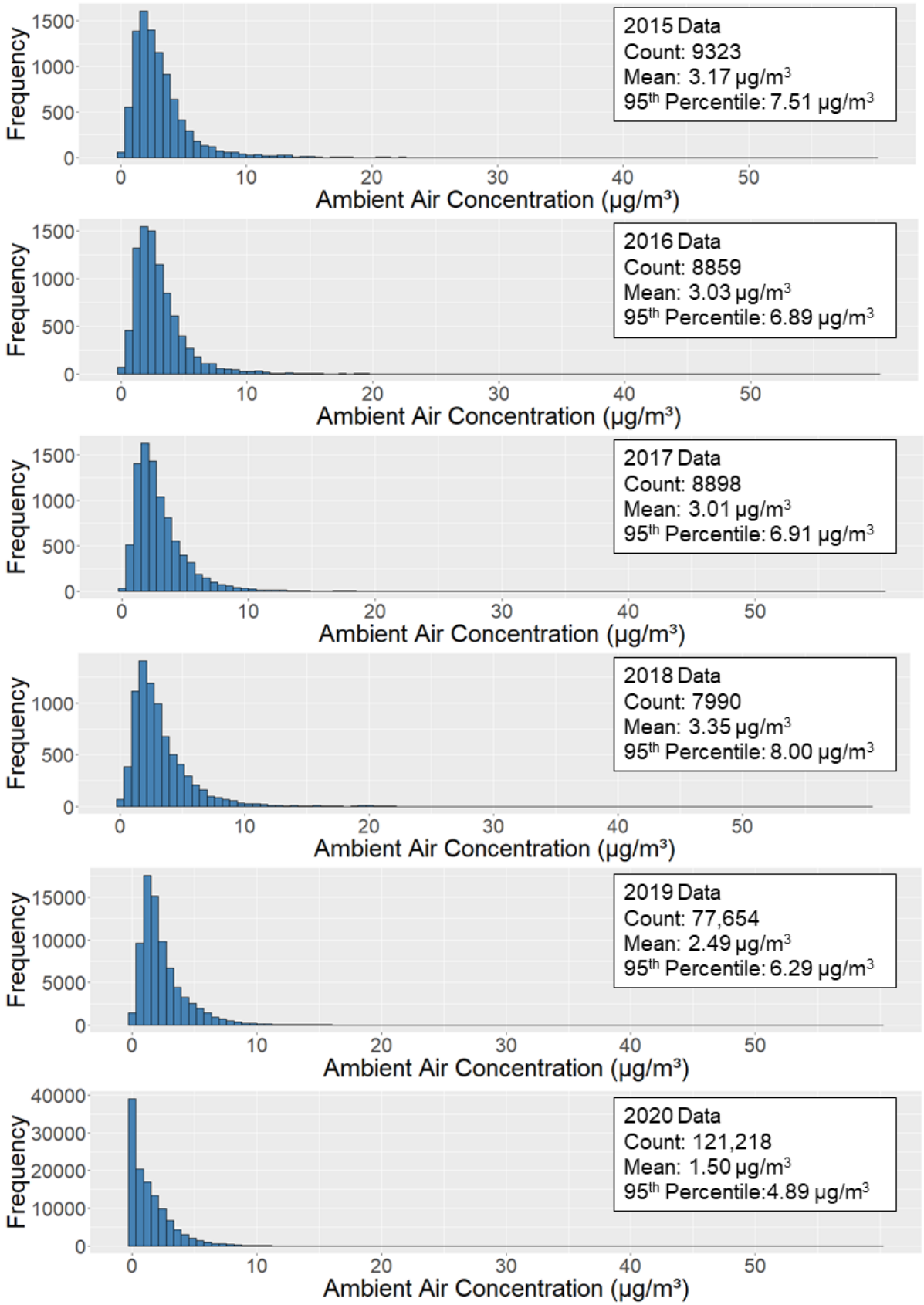

Figure 2-1. Histograms of Ambient Air Concentrations (µg/m^3) of Formaldehyde across Contiguous United States from 2015 to 2020

From the overall AMTIC dataset, samples were collected from June 1, 2015, through December 31, 2020. Within this dataset, EPA found 24 percent of entries lacked standardized concentration data. The Agency also found 15 percent of samples fall below the standard method detection limit (MDL) with a mean standardized formaldehyde concentration of 2.1 ± 2.2 μg/m^3. The overall monitoring dataset had concentrations ranging from 0 to 60 μg/m^3 with a median value of 1.6 μg/m^3. Figure 2-2 shows the location and relative concentration of formaldehyde at each formaldehyde monitoring site.

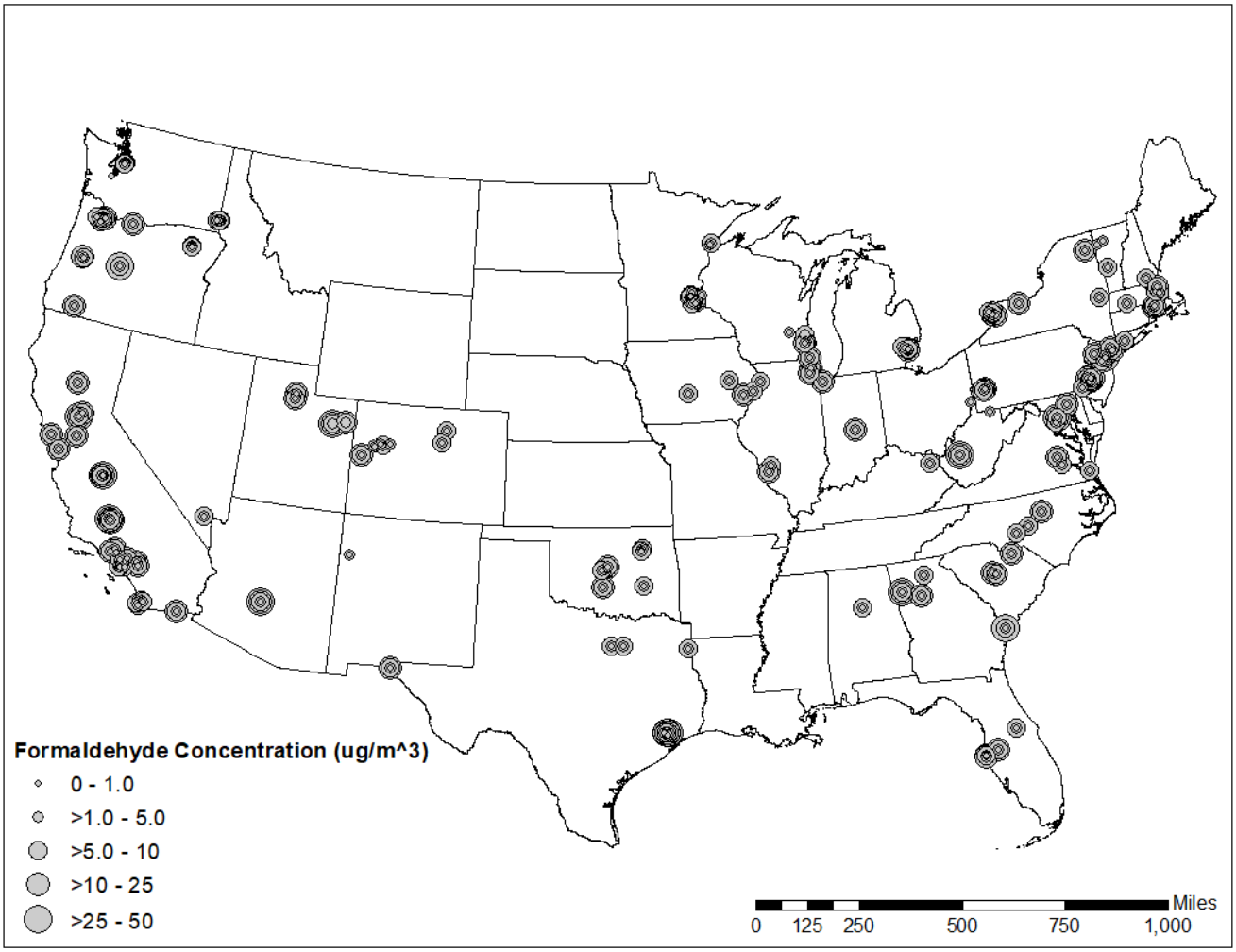

Figure 2-2. Map of Monitoring Sites for Formaldehyde across the Contiguous United States

2.1.3 Ambient Air Modeling

EPA modeled a suite of exposure scenarios with the Integrated Indoor-Outdoor Air Calculator (IIOAC), including releases from two separate datasets (TRI and NEI). These results are provided in the *Draft Ambient Air Exposure Assessment Results and Risk Calcs Supplement A*" to the *Draft Ambient Air Exposure Assessment for Formaldehyde* (EPA, 2024a).

EPA utilized the 95th percentile of annual release by industry sector reported to TRI, as well as the downwind modeled daily-averaged and annual-averaged air concentrations from the IIOAC output file at three distances (100, 100 to 1,000, and 1,000 m) from the releasing facility, to calculate exposure concentrations for each industry sector and corresponding COU.

Exposure concentrations across all industry sectors and associated COUs ranged from 0.0001 to 5.7 µg/m^3 between 100 to 1,000 m from the releasing facility and are shown in Figure 2-3. Their distribution is shown in Figure 2-4. The highest modeled formaldehyde ambient air concentration was 50.5 µg/m^3 and occurred at 100 m from the release source (not shown).

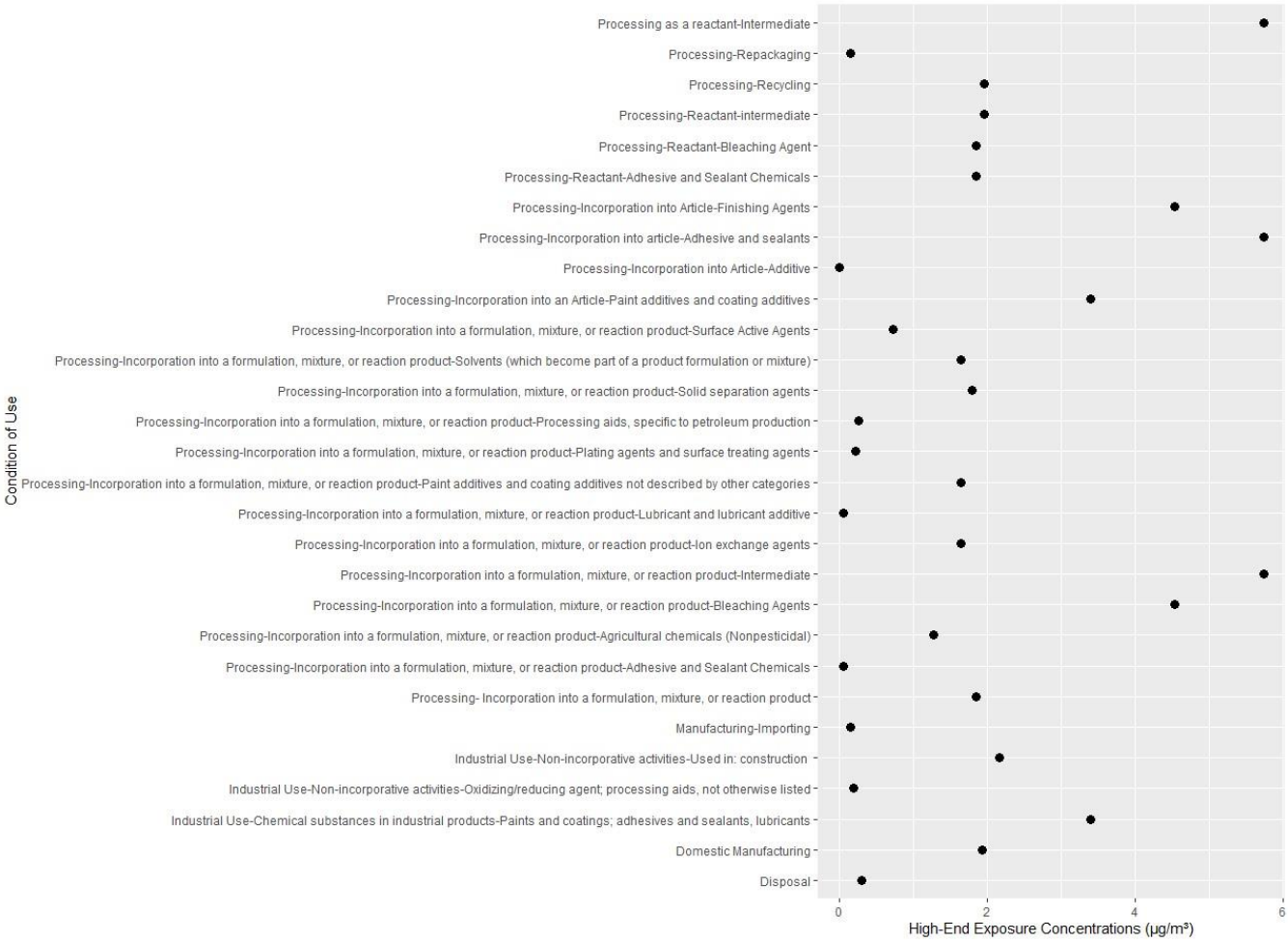

Figure 2-3. Exposure Concentrations by TSCA COU for the 95th Percentile Release Scenario and 95th Percentile Modeled Concentration between 100 and 1,000 m from Industrial Facilities Releasing Formaldehyde to the Ambient Air

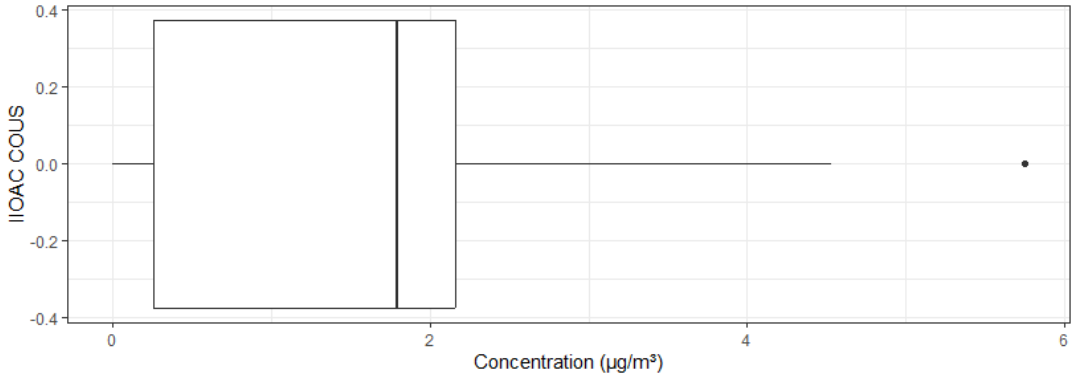

Figure 2-4. Distribution of Exposure Concentrations Modeled by IIOAC

A total of 810 TRI reporting facilities reported releases of formaldehyde to the ambient air. These facilities represented 35 industry sectors, which were evaluated in the ambient air exposure assessment and are associated with 29 formaldehyde TSCA COUs, as shown in the Figure 2-3. Thirty-one of the 35 industry sectors (88.5 percent) have calculated exposure concentrations within an order of magnitude of each other. Across all 35 industry sectors evaluated, 15 (42.8 percent) have calculated exposure concentrations greater than 1 μg/m^3; 16 (45.7 percent) have calculated exposure concentrations between 0.1 and 1 μg/m^3; 3 (8.6 percent) have calculated exposure concentrations between 0.01 and 0.1 μg/m^3; and 1 has a calculated exposure concentration of 0.0001 μg/m^3 within the 100 to 1,000 m area distance.

The following three industry sectors had the highest calculated exposure concentrations:

- Non-metallic Mineral Product Manufacturing (5.7 μg/m^3);
- Textiles, Apparel, and Leather Product Manufacturing (4.5 μg/m^3); and
- Transportation Equipment Manufacturing (3.4 μg/m^3).

Together, these three industry sectors are associated with seven formaldehyde TSCA COUs:

- Processing – incorporation into an article-adhesives and sealant chemicals (5.7 μg/m^3);
- Processing as a reactant – intermediate (5.7 μg/m^3);
- Processing – incorporation into a formulation, mixture, or reaction product-intermediate (5.7 μg/m^3);
- Processing – incorporation into article-finishing agent (4.5 μg/m^3);
- Processing – incorporation into a formulation, mixture, or reaction product-bleaching agents (4.5 μg/m^3);
- Processing – incorporation into an article-paint additives and coating additives (3.4 μg/m^3); and
- Industrial use – chemical substances in industrial products-paints and coatings; adhesives and sealants, lubricants (3.4 μg/m^3).

Although a single industry sector can represent multiple formaldehyde TSCA COUs (as shown above where Non-Metallic Mineral Product Manufacturing is associated with the first three TSCA COUs), it is also possible that multiple industry sectors are associated with an individual formaldehyde TSCA COU. Therefore, in addition to the maximum values plotted in Figure 2-3, there may be additional exposure estimates for each formaldehyde TSCA COU that better represent individual industry processes. For example, the exposure concentration for the TSCA COU "Industrial use – non-incorporative activities – oxidizing/reducing agent; processing aids, not otherwise listed" is plotted as 0.20 μg/m^3; however, the exposure concentrations for this COU ranged from 0.09 to 0.2 μg/m^3 across four industry sectors as listed below:

- Organic Fiber Manufacturing (0.2 μg/m^3);
- Computer and Electronic Part Manufacturing (0.09 μg/m^3);
- Fabricated Metal Product Manufacturing (0.19 μg/m^3); and
- Primary Metal Manufacturing (0.12 μg/m^3).

For reference, a table of results for all the industry sectors and the associated industrial TSCA COUs is provided in Appendix D of the *Draft Ambient Air Exposure Assessment for Formaldehyde* (EPA, 2024a). Some TSCA industrial COUs were associated with industry sectors not captured within the TRI database, EPA used ambient air results from the NEI data in those cases. These results are provided in the *Draft Ambient Air Exposure Assessment Results and Risk Calcs Supplement A*" to the *Draft Ambient Air Exposure Assessment for Formaldehyde* (EPA, 2024a).

2.1.4 Conclusion: Terrestrial Exposures

Formaldehyde is a highly volatile chemical that does not sorb, bind to, or persist in soil or organic matter based on the *Draft Chemistry, Fate, and Transport Assessment for Formaldehyde* (EPA, 2024b). The chemical substance is highly reactive and transforms rapidly in these environments. No monitoring data is readily available for formaldehyde in soils. If formaldehyde is in soil, its physical chemistry and fate properties and Henry's Law constant (3.37×10^{-7} atm/m^3·mol at 25 °C) indicate formaldehyde will rapidly volatilize into air. Therefore, EPA determined that while exposure via inhalation of soil or dust to terrestrial organisms is not expected to occur, exposure of terrestrial species to gaseous formaldehyde via the ambient air pathway-inhalation route may occur.

2.2 Aquatic Exposure

There are industrial processes and products for which reported releases of formaldehyde to surface water were found. Although reported as formaldehyde, the actual form (*e.g.*, formaldehyde, formalin, paraformaldehyde, etc.) of formaldehyde released is unknown. Additionally, formaldehyde is highly reactive in water and transforms to its hydrated form methylene glycol almost instantly (within 8 seconds). Methylene glycol further transforms to other oligomers, many of which are structurally dissimilar to formaldehyde or methylene glycol (Boyer et al., 2013). As such, it is unlikely formaldehyde would remain in its native or hydrated state in water long enough to lead to formaldehyde exposures of aquatic or terrestrial organisms who may consume surface water. Furthermore, formaldehyde does not bioaccumulate and therefore is not expected to be in fish that may be consumed by aquatic or terrestrial organisms via the dietary pathway.

EPA considered surface water releases of formaldehyde (Section 2.2.1), surface water monitoring (Section 2.2.2), and potential modeling based on the available tools (Section 2.2.3), to qualitatively assess formaldehyde exposure to aquatic organisms. EPA only qualitatively assesses formaldehyde exposure to aquatic species since formaldehyde does not persist in water under natural environmental conditions. This is consistent with the International Programme on Chemical Safety's Concise International Chemical Assessment Document 40: Formaldehyde (IPCS, 2002).

2.2.1 Surface Water Releases

Based on TRI and DMR reporting, less than 150,000 kg/yr of formaldehyde are released directly to surface water from TSCA-related activities, and approximately 2 million kg per year are directed to wastewater treatment facilities (see Appendix E, Environmental Release Module). However, the high reactivity of formaldehyde and its hydrated form in water indicates a low likelihood of persistence prior to release to surface water (or entry into a wastewater treatment facility). Current wastewater treatment technologies have been shown to remove up to 58 to 99 percent of formaldehyde prior to releasing into a discharge stream (EPA, 2024b).

2.2.2 Surface Water Monitoring

Surface water monitoring data indicate formaldehyde is usually below detection limits. According to the Water Quality Portal (WQP), there were 866 formaldehyde monitoring activities between 1969 and 2022 (EPA, 2022b). Only 11 percent of samples reported formaldehyde concentrations, but most were from sampling events before 1975 and their quality could not be verified (EPA, 2024c). For sampling events after 1975, 11 formaldehyde concentrations were detected but were also low quality due to percent recoveries in lab results. The low quality of all detected samples diminished EPAs confidence that they reasonably represented concentrations of formaldehyde in surface water. Although EPA reached out to state representatives responsible for those data sets, no responses were received.

Considering the reactivity of formaldehyde in water and the lack of available information around the form of formaldehyde released to water, it is unclear if the surface water sampling and analytical methodologies applied for the monitoring activities reported in the WQP were designed to determine such differences or effectively measure either in surface water.

2.2.3 Surface Water Modeling

EPA ordinarily uses the Exposure and Fate Assessment Screening Tool (E-FAST) to assess potential surface water exposures due to chemical environmental releases. However, E-FAST does not consider post-release fate or downstream transport such as aerobic degradation, hydrolysis, volatilization, etc.(Versar, 2014). For these reasons, E-FAST is not an appropriate model to assess aquatic exposures to formaldehyde resulting from a water release. As a result, any attempt to model such exposures from reported TSCA releases would lead to overestimation of formaldehyde exposures via the water pathway.

2.2.4 Conclusion: Aquatic Exposures

Based on the evidence presented above, EPA concludes that concentrations of formaldehyde in aquatic systems are negligible.

2.3 Trophic Transfer Exposure

Formaldehyde exposures are not expected to occur to aquatic organisms. According to the Agency for Toxic Substances and Disease Registry, experiments with various fish and shrimp showed no evidence of the bioaccumulation of formaldehyde (ATSDR, 1999). Therefore, EPA does not expect any trophic transfer of formaldehyde.

2.4 Weight of Scientific Evidence Conclusions for Environmental Exposures

Based on the exposure systematic review standard operating procedures (EPA, 2021), only studies and datasets with data deemed useful in generating a quantitative assessment (*e.g.*, via modeling) progress from data evaluation to data extraction. Because no traditional quantitative assessment was performed, monitoring data were mainly incorporated as key references used to qualitatively support the environmental exposure assessment of formaldehyde. However, as presented in Section 0, EPA performed a semi-quantitative screening assessment of terrestrial ambient air exposures to formaldehyde, utilized the peer-reviewed IIOAC model to estimate formaldehyde concentrations at three predefined distances from releasing facilities, and used reported release data from both TRI and NEI datasets.

The weight of scientific evidence for the environmental exposure assessment of formaldehyde is primarily dependent upon (1) federally curated monitoring studies and datasets (*e.g.*, AMTIC, TRI, NEI, WQP datasets (EPA, 2023, 2022a, b, 2019)), though such data are not specific to TSCA COUs; (2) completed assessments from U.S. Agencies (IPCS, 2002; ATSDR, 1999); and (3) EPA guidance documents (Versar, 2014; EPA, 1993) and other formaldehyde modules in this draft formaldehyde risk evaluation (EPA, 2024a, b, e). Altogether, EPA has high confidence in this environmental exposure assessment and the conclusions reached based on available data for formaldehyde.

2.4.1 Strengths, Limitations, Assumptions, and Key Sources of Uncertainty for the Environmental Exposure Assessment

EPA qualitatively evaluated exposures to terrestrial organisms in this environmental exposure assessment. IIOAC was used to estimate formaldehyde air concentrations from air releases related to a specific TSCA COU at three predefined distances from releasing facilities. Estimated concentrations at

these predefined distances can be relied upon to estimate exposures to species residing within those distances.

Formaldehyde does not persist in water as formaldehyde or its hydrated form (methylene glycol), as described above and in the chemistry, fate, and transport assessment module. As such, EPA does not further evaluate the water pathway. The decision to not further assess the water pathway is supported by several lines of evidence identified via EPA's systematic review process (EPA, 2021), published literature, monitoring data, and professional knowledge around analytical methods used to measure formaldehyde in water. These lines of evidence are summarized below:

- While releases to water are reported for formaldehyde, EPA is uncertain in what form formaldehyde is released.
- Even if formaldehyde is present in wastewater prior to treatment, current treatment technologies remove 58 to 99 percent of formaldehyde prior to releasing into a discharge stream.
- Formaldehyde immediately (within 8 seconds) transforms to its hydrated form (methylene glycol).
- Methylene glycol rapidly transforms to one of several different chemical forms, many of which are structurally dissimilar to either formaldehyde or methylene glycol (Boyer et al., 2013).
- Ninety-nine percent of sampling events where formaldehyde was actively sampled for were non-detect for formaldehyde (n = 92 sampling events).
- Formaldehyde and methylene glycol are not readily discernable from one another in the analytic outputs for the sampling events conducted; thus, if 99 percent of the samples were non-detect for formaldehyde, such a finding also indicates samples were non-detect for methylene glycol.
- Although there are potential ecological hazard endpoints for aquatic organisms, supporting studies were conducted in chamber test environments within which the organisms of interest were continuously exposed to relatively high concentration of formaldehyde that have not been documented in available monitoring data.
- Currently available tools are not appropriate for an aquatic assessment of formaldehyde because they do not account for formaldehyde's rapid transformation in water.

Although there are uncertainties noted throughout the environmental exposure assessment, none are expected to meaningfully impact the overall draft risk assessment conclusions.

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APPENDICES

Appendix A LIST OF ENVIRONMENTAL EXPOSURE ASSOCIATED SUPPLEMENTAL FILES

The following Environmental Exposure Associated Supplemental Information Files provide all supplemental data utilized for the draft assessment. See Docket EPA-HQ-OPPT-2018-0438 for all publicly released files associated with this draft risk evaluation package.

1. File Name: *Supplemental Water Quality Portal Results for Formaldehyde*
2. File Name: *Draft Ambient Air Exposure Assessment Results and Risk Calcs Supplement A*