# ATSDR Newsletter for Health Assessors Including APPLETREE Partners
## Guidance & Clearance News

**December 2022**

**This newsletter keeps you informed about guidance and resources that are available for use in your health evaluations.**

## What is in this Newsletter?

The following topics are included in this edition of the ATSDR Newsletter for Health Assessors. An index of all topics covered in previous newsletters has been added to the Public Health Assessment Guidance Manual (PHAGM) resources page under the heading of ADS Newsletters: Topics Related to Various PHAGM Sections.
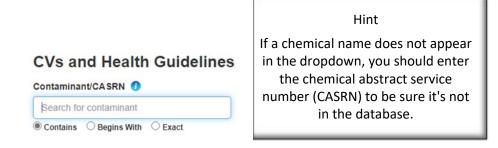
## Hidden Gems in PHAST: Selecting Chemicals in the Dropdown Chemical List

To use many of the features in the public health assessment site tool (PHAST), you start by entering a chemical name. PHAST's ability to generate hazard quotients (HQs) and cancer risk estimates depends upon the chemical name you select. If a name is misspelled, then the correct chemical may not show up in the dropdown list. This article provides some tips and insights so that you don't mistakenly assume that a chemical is not in the database.

### Searching for Chemicals

When you enter a chemical name in the contaminant field, the default search mode, which is the  "contains" radio button in the screenshot below, will treat the name entered as a word fragment and will look for that fragment in any chemical name in the database.  As shown in the screenshot below, you also have the option to switch the search mode
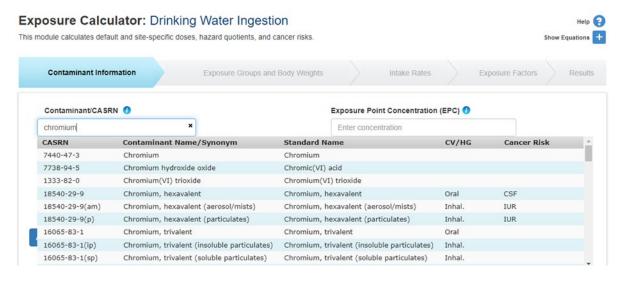
to "begins with" or "exact." If a chemical name does not appear in the dropdown, you should enter the chemical abstract service number (CASRN) to be sure it's not in the database, particularly for chemicals with numbers, parentheses, and dashes in their name. CASRN can be entered with or without dashes and spaces.  For example, benzene, can be entered as 71432, 71-43-2, or 71 43 2.



**Hint**

If a chemical name does not appear in the dropdown, you should enter the chemical abstract service number (CASRN) to be sure it's not in the database.

## Chemicals with Multiple Forms

### Chromium

Some chemicals have multiple chemical forms, some of which have guidelines while other forms do not.  A good example is chromium.  In the screenshot below, the user has entered "chromium" and PHAST has generated a chemical list with chromium as part of the chemical name.  The list also shows the health guidelines and cancer toxicity values that are available for each chemical form. If you were to select "Chromium," meaning elemental chromium, no hazard quotients or cancer risk estimates would be calculated by PHAST because no health guidelines or cancer toxicity values are available for elemental chromium. In contrast, health guideline values are available for trivalent and hexavalent chromium.  In addition, inhalation guidelines are specific to the medium, such as aerosol/mists and particulates.  These are clues that you need to know the environmental media and the chemical form so you can select the correct name from the dropdown list.



Some safeguards have been coded into PHAST. For example, if you were in the drinking water ingestion module and were to mistakenly select "Chromium, hexavalent (particulates)," which has inhalation health guidelines and cancer toxicity values, PHAST would not use those toxicity values to calculate hazard quotients and cancer risks for drinking water.  You would need to select "Chromium, hexavalent," which has oral health guidelines and cancer toxicity values.

2

ATSDR has interim guidance on evaluating hexavalent chromium. This guidance is available on the resource page in ATSDR's Public Health Assessment Guidance Manual (PHAGM) at ATSDSR Interim Chromium Guidance.
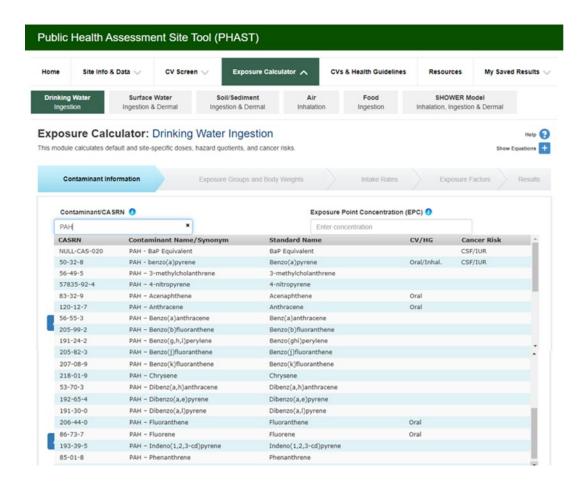
## Chemical Groups

### Polycyclic Aromatic Hydrocarbons

Some chemicals, such as benzo(a)pyrene (BaP), are part of the chemical group, polycyclic aromatic hydrocarbons (PAHs). Quite often when reviewing analytical reports, you are presented with a long list of PAHs. You can quickly identify which chemicals have health guidelines by typing in PAH as the contaminant name. This will bring up a list of PAH chemicals as shown in the screenshot that follows. Those PAHs with their own health guideline should be evaluated individually by calculating chemical-specific HQs and, if cancer toxicity values are available, calculating PAH-specific cancer risks.

You can see in the screenshot below that "PAH – BaP Equivalent" is also listed in the database and that it has a cancer slope factor (CSF) and an inhalation unit risk (IUR). This tells you that you should also calculate BaP equivalents from your PAH mixture to estimate cancer risk. ATSDR has guidance on how to calculate BaP equivalents to estimate cancer risk (ATSDR 2022). In addition, ATSDR has a 1-hr training video available at: Guidance for Determining PAH Cancer Risk - YouTube.
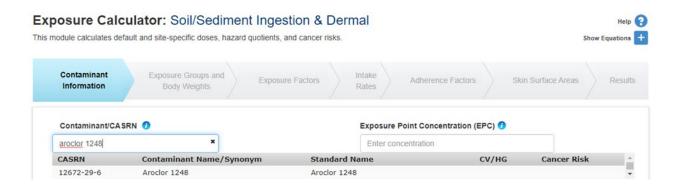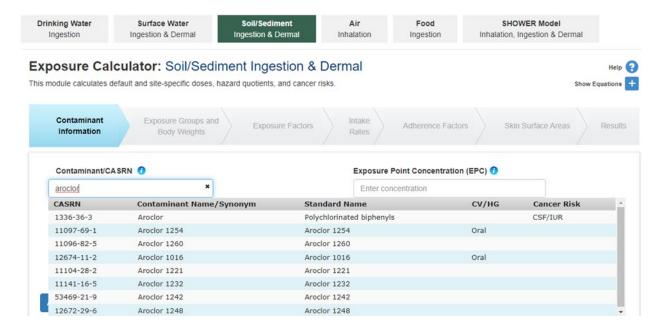
## Aroclors and Polychlorinated Biphenyls

Another group of chemicals with a complex nomenclature is polychlorinated biphenyls (PCBs), which can be designated as PCB congeners or by their tradename Aroclor followed by a 4-digit number, such as Aroclor 1254. Determining HQs and cancer risks for PCBs and Aroclors is tricky because noncancer health guidelines, such as minimal risk levels (MRLs), are available for some Aroclors but not available for individual PCBs.  Conversely, cancer slope factors (CSFs) are available for PCBs but not available for Aroclors.

If you type Aroclor 1248, you will get one chemical showing in the dropdown list, and this chemical does not have a health guideline or a cancer toxicity value.



If you type just Aroclor, you will get a list that shows all the Aroclors. The list shows that we have non-cancer health guidelines for Aroclors 1254 and 1016 but not for the other Aroclors.  The list also shows that we have cancer toxicity values for PCBs but not for the individual Aroclors.



PHAST is set up to show you the different names used for PCBs and Aroclors along with the health guidelines and cancer toxicity values that are available (or not available).  The dropdown list provides clues that guide you in selecting the chemical form that will allow you to calculate HQs and cancer risk. Because evaluating PCBs and Aroclors is complex, you may wish to consult with the Agency's subject matter expert (SME) for PCBs or contact the Associate Director for Science (ADS) offices for guidance.

| Drinking Water Ingestion | Surface Water Ingestion & Dermal | Soil/Sediment Ingestion & Dermal | Air Inhalation | Food Ingestion | SHOWER Model Inhalation, Ingestion & Dermal |
|---|---|---|---|---|---|

## Exposure Calculator: Soil/Sediment Ingestion & Dermal

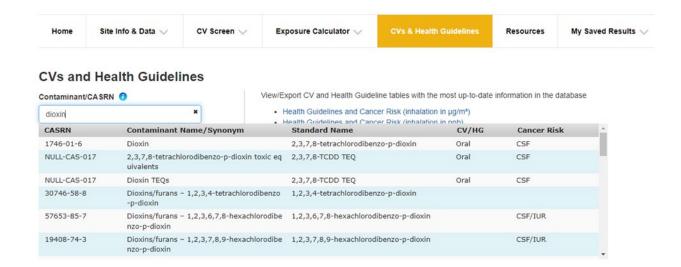This module calculates default and site-specific doses, hazard quotients, and cancer risks.

Help ❓  Show Equations ➕

| Contaminant Information | Exposure Groups and Body Weights | Exposure Factors | Intake Rates | Adherence Factors | Skin Surface Areas | Results |
|---|---|---|---|---|---|---|

**Contaminant/CASRN** ℹ️

pcb ✖

**Exposure Point Concentration (EPC)** ℹ️

Enter concentration

| CASRN | Contaminant Name/Synonym | Standard Name | CV/HG | Cancer Risk |
|---|---|---|---|---|
| 1336-36-3 | PCB | Polychlorinated biphenyls | | CSF/IUR |
| 12674-11-2 | PCB 1016 | Aroclor 1016 | Oral | |
| 11104-28-2 | PCB 1221 | Aroclor 1221 | | |
| 11141-16-5 | PCB 1232 | Aroclor 1232 | | |
| 53469-21-9 | PCB 1242 | Aroclor 1242 | | |
| 12672-29-6 | PCB 1248 | Aroclor 1248 | | |
| 11097-69-1 | PCB 1254 | Aroclor 1254 | Oral | |
| 11096-82-5 | PCB 1260 | Aroclor 1260 | | |
| 2051-62-9 | PCB 4-chlorobiphenyl | 4-chlorobiphenyl | | |

## Dioxins and Furans

Dioxins and furans are another complex chemical group that has multiple possible chemicals to select from and thus requires some thought in selecting the right chemical in PHAST. A quick and easy way to review the available health guidelines and cancer toxicity values is to enter dioxin as the contaminant name. This will provide a long list of names in the dropdown starting with 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD). The list will also include 2,3,7,8-TCDD TEQ (toxic equivalent), other dioxin compounds, and dioxin-like PCBs. Enter "furan" to see a list of dibenzofurans.

Located in the PHAGM resource section, two documents are available to help you with evaluating dioxins (ATSDR 2019):

- The Toxic Equivalents Guidance for Dioxin and Dioxin-like Compounds, and
- A Case Study with two examples.

| Home | Site Info & Data ⌄ | CV Screen ⌄ | Exposure Calculator ⌄ | CVs & Health Guidelines | Resources | My Saved Results ⌄ |
|---|---|---|---|---|---|---|

## CVs and Health Guidelines

**Contaminant/CASRN** ℹ️

dioxin ✖

View/Export CV and Health Guideline tables with the most up-to-date information in the database
- Health Guidelines and Cancer Risk (inhalation in µg/m³)
- Health Guidelines and Cancer Risk (inhalation in ppb)

| CASRN | Contaminant Name/Synonym | Standard Name | CV/HG | Cancer Risk |
|---|---|---|---|---|
| 1746-01-6 | Dioxin | 2,3,7,8-tetrachlorodibenzo-p-dioxin | Oral | CSF |
| NULL-CAS-017 | 2,3,7,8-tetrachlorodibenzo-p-dioxin toxic equivalents | 2,3,7,8-TCDD TEQ | Oral | CSF |
| NULL-CAS-017 | Dioxin TEQs | 2,3,7,8-TCDD TEQ | Oral | CSF |
| 30746-58-8 | Dioxins/furans – 1,2,3,4-tetrachlorodibenzo-p-dioxin | 1,2,3,4-tetrachlorodibenzo-p-dioxin | | |
| 57653-85-7 | Dioxins/furans – 1,2,3,6,7,8-hexachlorodibenzo-p-dioxin | 1,2,3,6,7,8-hexachlorodibenzo-p-dioxin | | CSF/IUR |
| 19408-74-3 | Dioxins/furans – 1,2,3,7,8,9-hexachlorodibenzo-p-dioxin | 1,2,3,7,8,9-hexachlorodibenzo-p-dioxin | | CSF/IUR |

In closing, remember to search using the CASRN when a chemical is not found in the database. Also, try searching on a variety of chemical names, particularly when you are looking for a chemical that is part of a larger group of similar chemicals, such as PAHs, dioxins, and PCBs. And finally, check out the available health guideline and cancer toxicity values in the dropdown list to help guide you in selecting the right chemical that matches your analytical data. And finally, consult with ATSDR's SMEs as you conduct your analysis, particularly on chemicals with a complex nomenclature.

If you have suggestions or questions about PHAST, send an email to PHAST@cdc.gov.

*Contributing author: David Mellard (dmellard@cdc.gov), OCDAPS*

# Describing Cancer Classifications in Public Health Documents

Three U.S. agencies and one international agency have cancer classification systems for carcinogens:
- National Toxicology Program (NTP) within the U.S. Department of Health and Human Services (DHHS)
- National Institute for Occupational Safety and Health (NIOSH) within the U.S. DHHS
- U.S. Environmental Protection Agency (EPA)
- International Agency for Research on Cancer (IARC) within the World Health Organization (WHO)

## Tips for Describing Classifications

When evaluating carcinogens in public health assessments (PHAs) and health consultations (HCs), we typically mention the cancer classification, so here are a few rules to follow:

1. Mention the cancer classification from the NTP within the U.S. DHHS and from the U.S. EPA.
2. Mentioning the cancer classification by IARC or NIOSH is optional. Include the NIOSH classification only for those pathways that involve occupational exposures.
3. Use plain language when describing the cancer classification, such as "the NTP within the U.S. DHHS and the U.S. EPA have classified benzene as known to cause cancer in humans (ATSDR [insert tox profile date])." Plain language statements about cancer should include a reference to the agency determination, so the reader will know where to find the exact agency classification language. We suggest using the ATSDR Toxicological Profile unless the cancer designation in the profile is out of date.
4. Avoid the alpha numeric designations that some agencies have developed, such as the U.S. EPA 1986 designations as Group A, Group B1, or Group B2, or the WHO designations of Group 1, Group 2A, and Group 2B. You may include plain language descriptions of these, if needed, as part of the description.

## Where to Find Agency Classifications

Chemical-specific cancer classifications can be found in ATSDR's public health assessment site tool (PHAST) within the CVs (comparison values) and health guidelines module. Once you've entered a chemical and are on the "health guidelines" tab, you'll scroll down to find a table showing cancer classification from the three U.S. agencies and from IARC.

Below is an example using benzene that shows how the cancer classification information is presented in PHAST and indicates whether age-dependent adjustment factors (ADAF) are used.

| Agency | Cancer Class | Description | Year |
|---|---|---|---|
| U.S. EPA | KL | Known/Likely human carcinogen | 2000 |
| U.S. DHHS/NTP | 1 | Known human carcinogen | 2016 |
| U.S. DHHS/NIOSH | OC | Occupational carcinogen | ND |
| IARC | 1 | Carcinogenic to humans (sufficient human evidence) | 2018 |

*Some cancer class abbreviations were created by ATSDR and are listed here for ease of use only, and do not represent official agency classification.  See Cancer Classification Systems for a summary. ND = no date

   Is contaminant classified as a mutagen?  No
   Are ADAFs applied in PHAST?  No

A detailed description of the cancer classifications used from U.S. agencies and IARC can be found in the resource section of the Public Health Assessment Guidance Manual: Cancer Classification System.

## Age Dependent Adjustment Factors

PHAST also includes information about whether the carcinogen is a mutagen and whether age-dependent adjustment factors (ADAFs) are used in calculating cancer risk. A brief explanation about how ADAFs are used in PHAST can be found in ATSDR's exposure dose guidance documents for water ingestion (EDG Water Ingestion) and for soil ingestion (EDG Soil Ingestion).  A detailed description of ADAFs is available from EPA's  Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens. These documents are also available from the PHAST resource page.

*Contributing author: David Mellard (dmellard@cdc.gov), OCDAPS*

# How to Cite the 2022 Public Health Assessment Guidance Manual

When referencing the Public Health Assessment Guidance Manual, which is now available online, we suggest the following citation:

[ATSDR] Agency for Toxic Substances and Disease Registry. 2022. Public health assessment guidance manual (PHAGM). Atlanta: US Department of Health and Human Services. Available at: https://www.atsdr.cdc.gov/pha-guidance/index.html [accessed 2022 August 11].
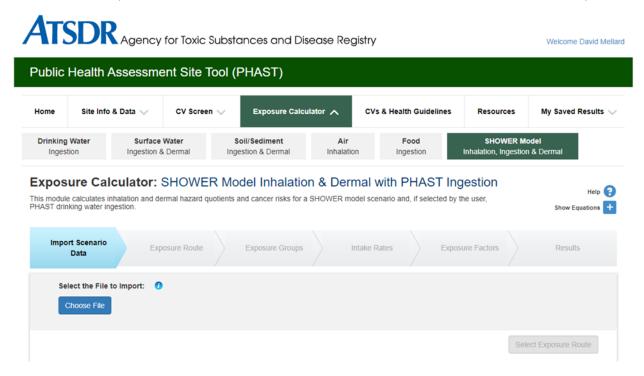
# New Features in the SHOWER Model v3.0

In May 2022, ATSDR released v3.0 of the Shower and Household Water-use Exposure (SHOWER) model. Below are the new features in v3.0 and how those features might affect past and future model outputs.

## SHOWER Model Results Can Now Be Incorporated into PHAST

A major upgrade to v3.0 is the ability to export the results from the SHOWER model as a text file on your computer. You can then load this text file into PHAST to calculate hazard quotients (HQs) and cancer risks using the SHOWER model calculator in PHAST. The SHOWER model calculator is located with the other calculators within PHAST in the Exposure Calculator module (highlighted in green below.)

The first screen in the calculator is the Import Scenario Data screen. On this screen, you'll click "Choose File" and import the text file from your SHOWER model run. Follow the screens to run either a default or a site-specific scenario.



## Model Outputs Are Presented for Both Central Tendency Exposures (CTE) and Reasonable Maximum (RME) Exposures

A new feature in v3.0 is results are provided based on CTE and RME scenarios. ATSDR conducted a Monte Carlo analysis, which showed that v2.0 results approximated CTE exposures. ATSDR then used the Monte Carlo distribution to identify both CTE and RME exposures. Because Monte Carlo analysis requires long run-times, ATSDR created two scenarios that closely approximated the CTE and RME results from Monte Carlo runs. Tables 1 and 2 show the CTE and RME results for inhalation and dermal exposure, respectively, for a four-person household.

**Table 1. Daily exposure concentration in µg/m³ from using household water with 10 ppb tetrachloroethylene**

| Scenario Type | 4-Person Household |
|---|---|
| RME | 7.4 |
| CTE | 3.4 |

Abbreviations: µg/m³ = micrograms chemical per cubic meter air;
CTE = central tendency exposure; RME = reasonable maximum exposure

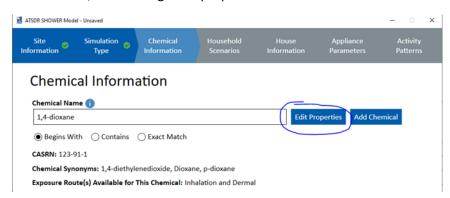**Table 2.  Daily administered dermal doses in µg/kg/day from using household water with 10 ppb tetrachloroethylene**

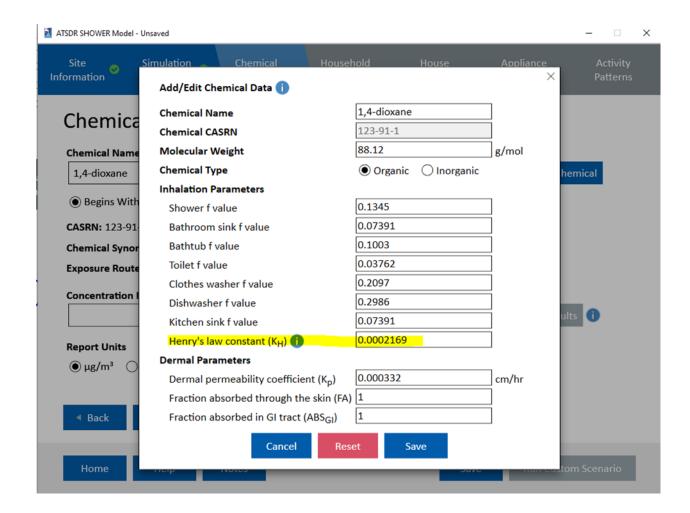| Exposure Group | CTE 4-Person Household | RME 4-Person Household |
|---|---|---|
| Birth to < 1 year | 0.042 | 0.063 |
| 1 to < 2 years | 0.039 | 0.058 |
| 2 to < 6 years | 0.033 | 0.050 |
| 6 to < 11 years | 0.027 | 0.041 |
| 11 to < 16 years | 0.022 | 0.033 |
| 16 to < 21 years | 0.020 | 0.030 |
| Adult | 0.020 | 0.030 |
| Pregnant & breastfeeding women | 0.020 | 0.030 |

Abbreviations: µg/kg/day = micrograms chemical per kilograms body weight per day;
CTE = central tendency exposure; RME = reasonable maximum exposure

## New Governing Equations Account for Saturation Effects on Volatility

ATSDR added an air saturation term to the governing equations for the SHOWER model v3.0. For volatile chemicals, such as chlorinated solvents and benzene, results from running v3 will be similar to results from v2.  For some less-volatile chemicals, however, results from running v3 will be up to 6 times lower compared to results from v2 because air saturation affects volatility for some chemicals.  For chemicals with a dimensionless Henry's Law Constant ($K_H$) less than $8.2 \times 10^{-3}$ ($2 \times 10^{-4}$ atm-m³/mol), the air saturation can affect volatility.  We recommend that you recalculate v2 results when $K_H$ is less than $8.2 \times 10^{-3}$. A common chemical that falls into this category is 1,4-dioxane ($K_H$ = 2.2E-4).

Health assessors can find the $K_H$ value for a chemical by going to chemical information screen in v2.0 or v3.0, entering the chemical, and clicking "edit properties" as shown in the next two screenshots.

## Training Videos Now Available on YouTube

Two training videos on the SHOWER model are available through CDC's YouTube channel. The first 1-hour training video will show you how to use the v3.0 SHOWER model to generate results. This training video is available at: ATSDR SHOWER Model v3.0 Webinar - YouTube. The second 1-hour training video will show you how to export results from v3.0 of the SHOWER model and how to import those results in PHAST to generate HQs and cancer risks. The second training video is available at: ATSDR SHOWER Model PHAST Calculator Webinar - YouTube.
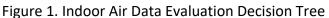
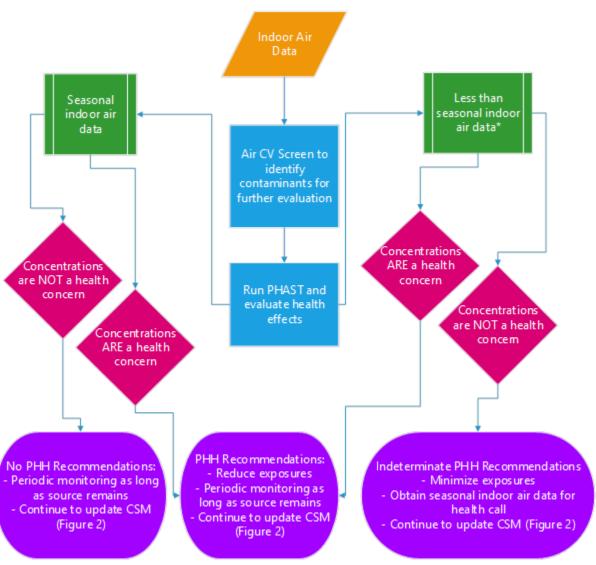*Contributing Author: David Mellard (dmellard@cdc.gov), OCDAPS*

## Vapor Intrusion Data Decision Tree

Vapor intrusion (VI) is often considered a difficult pathway to evaluate because multiple media and lines of evidence are involved. There are many factors that cause considerable variation in contaminant concentrations over time and space. This article focuses on the basic data that may be available for VI sites and how to evaluate those data.

The main line of evidence needed for making a public health hazard conclusion is measured indoor air concentrations. This decision process is shown as an Indoor Air Data Evaluation Decision Tree in Figure 1: The first step is to screen indoor air data with air comparison values (CVs) using ATSDR's Public Health Assessment Site Tool (PHAST). Health assessors then run PHAST to derive exposure point concentrations and calculate cancer risks for the chemicals that

require further evaluation. The next step is to determine if seasonal indoor air (hot and cold weather) data are available and determine if the data represent a health concern by comparing the exposure point concentrations to the health effect levels in PHAST's health guideline module and assessing the cancer risks. Recommendations for sites with seasonal indoor air data that are not a health concern (no public health hazard) include periodic monitoring as long as the source remains and continuing to update the conceptual site model. Recommendations for sites that either have or do not have seasonal indoor air data and that are a health concern (a public health hazard) include reducing exposures, periodic monitoring as long as a source remains, and continuing to update the conceptual site model. Sites that have less than seasonal indoor air data and have concentrations that are not a health concern are an indeterminate public health hazard (due to the data gap) and have recommendations for minimizing exposures, obtaining seasonal indoor air data, and continuing to update the conceptual site model.
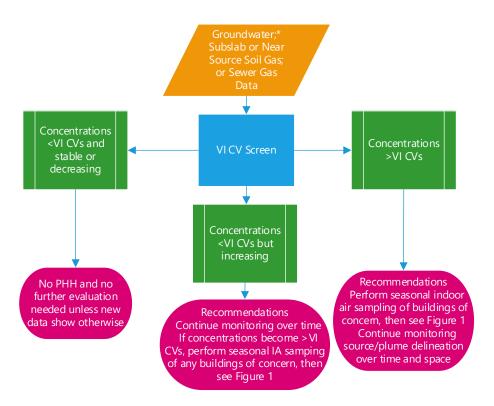
Figure 1. Indoor Air Data Evaluation Decision Tree



* Seasonal data refers to sampling in hot and cold weather, when building doors and windows remain closed and vapors are most likely to accumulate indoors.

Abbreviations: CV = comparison value, PHAST = public health assessment site tool, PHH = public health hazard, CSM = conceptual site model

11

Since sampling usually only represents 2 or 3 days of the year, the conceptual site model (CSM) is very important for understanding how well the measured indoor air data are for representing actual exposures over time. Data from subsurface media (groundwater, sub-slab soil gas, near-source soil gas, crawlspace gas, and sewer gas) may be available to aid in understanding the overall conceptual site model. Figure 2 shows the Subsurface Data Evaluation Decision Tree. The first step is to screen groundwater, sub-slab soil gas, near-source soil gas, or sewer gas data against VI CVs. If the concentrations are greater than VI CVs, the recommendations are to perform seasonal indoor air sampling of buildings of concern, then perform the steps from Figure 1 and continue monitoring the source or plume delineation over time and space. If the concentrations are less than VI CVs but increasing, the recommendations are to continue monitoring over time; If the concentrations increase to become greater than VI CVs, perform seasonal indoor air sampling of any buildings of concern and perform the steps from Figure 1.  If concentrations are less than VI CVs and stable or decreasing, there is no public health hazard and no further evaluation is needed unless new data show otherwise.

Figure 2. Subsurface Data Evaluation Decision Tree



*Contact a VI subject matter expert if groundwater is less than five feet below the foundation or if there are potential preferential vapor migration routes, such as floor drain, open sump, earthen floor, or fractured bedrock.

Abbreviations: VI CV = vapor intrusion comparison value, PHH = public health hazard

Refer to ATSDR's vapor intrusion guidance for more in-depth descriptions of how to analyze data from the VI pathway.

*Contributing Author: Tonia Burk (fxt9@cdc.gov), OCHHA*

# 508 Tips and Trick: Complex Tables

Because ATSDR documents that will be placed on the internet need to be 508 compliant, the health assessor newsletter will have a series of articles about making our documents 508 compliant. These are common issues identified as documents are reviewed for 508 compliance.

For this edition of 508 tips and tricks, we are discussing complex tables. Below is an example of a complex table that is not 508 compliant.

| Contaminant | Property Identifier | Number of Samples | Comparison Value (CV) (ppm) | Concentration Range | | Number of Samples Exceeding CV |
|---|---|---|---|---|---|---|
| | | | | Minimum (ppm) | Maximum (ppm) | |
| Soil | | | | | | |
| Arsenic | 1 | 85 | 16 | 2 | 67 | 10 |
| Hexavalent Chromium | 1 | 74 | 0.22 | 0.73 | 5 | 74 |
| Lead | 1 | 12 | | 4 | 124 | |
| Surface Water | | | | | | |
| Arsenic | 1 | 12 | 0.000016 | 0.13 | 3 | 12 |
| Hexavalent Chromium | 1 | 15 | 0.000024 | 0.7 | 7 | 15 |
| Lead | 1 | 12 | | 0.3 | 10 | |
| Groundwater | | | | | | |
| Arsenic | 1 | 10 | 0.000016 | 0.000007 | 2 | 3 |
| Hexavalent Chromium | 1 | 110 | 0.000024 | 0.001 | 3.5 | 10 |
| Lead | 1 | 10 | | 1.2 | 67 | |

There are a few reasons why the table above is not 508 compliant:

1. The table does not have a title.
2. In the first row, the concentration range is merged and has a separate section header.
3. The table contains merged cells and separate sections in the body of the table identifying soil, surface water, and groundwater.
4. The table contains blank cells.

To make the above table less complex and 508 compliant, we converted the table into three separate tables with titles. We changed the complex column header for concentration range. We removed all merged cells, the nested row heading for soil, surface water, and groundwater, and we filled in any empty cells. Here are a few additional things to keep in mind to avoid complex tables and to create 508 compliant tables:

- Do not use tabs or spaces to create a table-like structure.
- Do not use an image of a table.
- Create a table using the insert table function in Microsoft Word or Excel.
- Structure a table so that there is a logical reading order and clear relationships between data in the table.
- Avoid nested row headings, complex column headers, merging or splitting of cells, and patterned backgrounds in tables.

- Do not leave empty cells but rather add N/A or a symbol. Define symbols in a footnote to the table.
- Ensure data tables identify all row and column headers.
- Add a table number and title above the table to briefly describe the purpose of the content within the table.

Table 1. Soil Samples by Property

| Contaminant | Property Identifier | Number of Samples | Comparison Value (CV) (ppm) | Maximum Concentration (ppm) | Minimum Concentration (ppm) | Number of Samples Exceeding CV |
|---|---|---|---|---|---|---|
| Arsenic | 1 | 85 | 16 | 2 | 67 | 10 |
| Hexavalent Chromium | 1 | 74 | 0.22 | 0.73 | 5 | 74 |
| Lead | 1 | 12 | - | 4 | 124 | - |

Dashes (-) indicate no data are available.

Table 2. Surface Water Samples by Property

| Contaminant | Property Identifier | Number of Samples | Comparison Value (CV) (ppm) | Maximum Concentration (ppm) | Minimum Concentration (ppm) | Number of Samples Exceeding CV |
|---|---|---|---|---|---|---|
| Arsenic | 1 | 12 | 0.000016 | 0.13 | 3 | 12 |
| Hexavalent Chromium | 1 | 15 | 0.000024 | 0.7 | 7 | 15 |
| Lead | 1 | 12 | - | 0.3 | 10 | - |

Dashes (-) indicate no data are available.

Table 3. Groundwater Samples by Property

| Contaminant | Property Identifier | Number of Samples | Comparison Value (CV) (ppm) | Maximum Concentration (ppm) | Minimum Concentration (ppm) | Number of Samples Exceeding CV |
|---|---|---|---|---|---|---|
| Arsenic | 1 | 10 | 0.000016 | 0.000007 | 2 | 3 |
| Hexavalent Chromium | 1 | 10 | 0.000024 | 0.001 | 3.5 | 10 |
| Lead | 1 | 10 | - | 1.2 | 67 | - |

Dashes (-) indicate no data are available.

When you submit your document to the Office of Communication for 508 review, you should also submit a separate document listing the alt text for figures, equations, and a summary of the tables that provides a brief description of the data.

*Contributing authors: Lateefah Daniel ([lpw1@cdc.gov](mailto:lpw1@cdc.gov)), OCDAPS, Michelle Alexandra Scott ([yzx@cdc.gov](mailto:yzx@cdc.gov)), OCOM, and John Truhe ([kta3@cdc.gov](mailto:kta3@cdc.gov)), OCDAPS*

## 2022 Public Health Assessment Training Webinars Now Available Online

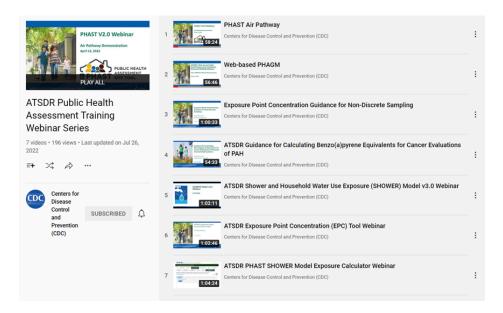ATSDR released several new guidance documents and tools in 2022. These include the web-based Public Health Assessment Guidance Manual (PHAGM), exposure point concentration (EPC) guidance for non-discrete sampling, and calculating benzo(a)pyrene equivalents for polycyclic aromatic hydrocarbons (PAHs). ATSDR also released Version 3.0 of the SHOWER model and a new ATSDR EPC Tool. The Public Health Assessment Site Tool (PHAST) was updated to include new modules for the air pathway and for integrating the SHOWER model results.

As each tool was released, ATSDR conducted a series of webinars from April through June 2022 to familiarize health assessors with ATSDR's new guidance and tools:

- **PHAST Air Pathway Demo**: Demonstrate how to use the new air pathway module to calculate exposure, hazard quotients, and cancer risks.
- **EPC Guidance for Non-discrete Sampling**: Train how to calculate EPCs for non-discrete sampling data.
- **Web-based PHAGM Demo**: Introduce the web-based PHAGM and demonstrate how to navigate through the site and use its features.
- **Guidance for PAHs**: Train how to calculate benzo(a)pyrene equivalents for cancer evaluations of PAH mixtures.
- **EPC Tool**: Introduce the EPC Tool, train how to use it to calculate EPCs, and demonstrate how to integrate the results into PHAST.
- **SHOWER Model V3.0**: Demonstrate how to use SHOWER Model V3.0 to calculate inhalation concentrations and dermal doses associated with volatile contaminants in household water.
- **PHAST SHOWER Model Module**: Demonstrate how to export results from the SHOWER model into PHAST and how to use the new PHAST SHOWER model module to calculate exposure, hazard quotients, and cancer risks.

These trainings are all available on CDC's YouTube page: ATSDR Public Health Assessment Training Webinar Series - YouTube.

Please email PHAST@cdc.gov to request access to PHAST. Email showermodel@cdc.gov to request ATSDR's SHOWER model, a stand-alone application that can be downloaded to your computer.

## New Publications on PHAGM and PHAST

Did you know that ATSDR recently published two articles related to public health assessment in the Journal of Environmental Health (JEH)?

The September 2022 JEH Issue features an article on the web-based Public Health Assessment Guidance Manual (PHAGM). The article gives an overview of the new PHAGM, including components and steps in the public health assessment process, descriptions of the existing sections, and future sections that are in development.

The November 2022 JEH Issue spotlights ATSDR's Public Health Assessment Site Tool (PHAST) and affiliated applications, including the Exposure Point Concentration tool, the SHOWER Model, and the Health Effects tool that's currently in development.

Citations:

Ulirsch GV. and Li Z. New Web-Based Public Health Assessment Guidance Manual —A Foundational Tool for Evaluating Exposure and Public Health Impacts in Communities. *Journal of Environmental Health*, September 2022. 85(2): 38-41. Available at: https://2022.neha.org/sites/default/files/jeh/JEH9.22-Column-Direct-From-ATSDR.pdf

Burk T, Mellard D, Ulirsch G and Li Z. Public Health Assessment Site Tool and Affiliated Applications: A Key Resource for Evaluating the Health Impact of Community Exposure to Hazardous Chemicals. *Journal of Environmental Health*, 2022, 85(4): 40-42. Available at: https://www.neha.org/Images/resources/JEH11.22-Column-Direct-From-ATSDR.pdf



ADVANCEMENT OF THE **PRACTICE**

▶ **DIRECT FROM ATSDR**

New Web-Based Public Health Assessment Guidance Manual: A Foundational Tool for Evaluating Exposure and Public Health Impacts in Communities

Gregory V. Ulirsch, MS, PhD

Zheng Li, MPH, PhD

ADVANCEMENT OF THE **PRACTICE**

▶ **DIRECT FROM ATSDR**

Public Health Assessment Site Tool and Affiliated Applications: A Key Resource for Evaluating the Health Impact of Community Exposure to Hazardous Chemicals

Tonia Burk, PhD
David Mellard, PhD
Gregory V. Ulirsch, PhD
Zheng Li, PhD

## Invitation to Write Articles for the Health Assessor Newsletter

We would like to invite ATSDR and APPLETREE staff to write articles for the Health Assessor Newsletters. The articles should be something about the PHA process that you think is educational for other health assessors to know. Articles need to be short. If long or complex, you should consider doing a series of articles. You can look at previous newsletters, which are stored on the PHAGM resource page, to get an idea of the topics and length. Writing articles is voluntary, and ATSDR staff should talk to their supervisor about time commitments.

APPLETREE staff will need to submit articles to their TPO who will share them with Audra Henry (ate1@cdc.gov) and David Mellard (dam7@cdc.gov). OCHHA staff should submit their articles to Tonia Burk (fxt9@cdc.gov). The articles will go through a preclearance review by the OCHHA and OCDAPS ADS offices and the ADS office will submit the newsletter with all articles for eClearance. The ADS offices will work with authors in getting  their article ready, responding to comments, and making edits to your article throughout the preparation and clearance process.

## Terminology:  Potential Contaminants of Concern

When selecting contaminants for further evaluation, several similarly sounding terms have appeared in ATSDR and APPLETREE-certified documents. These terms are contaminants of concern (COC), contaminants of potential concern (COPC), and potential contaminants of concern (COCs).

These terms have a somewhat complicated history.  COC was used in the 2005 PHAGM to identify contaminants that exceeded ATSDR's comparison values (CVs) and thus required further evaluation in the public health assessment (PHA) process.  The U.S. Environmental Protection Agency (EPA) uses the term COPC to identify those chemicals that exceed their screening levels and thus requires further evaluation using EPA's risk assessment methods to determine clean up. And finally, the 2022 PHAGM uses potential COCs.

We propose that ATSDR and APPLETREE-certified document use "**potential COC**" to identify those contaminants that exceed CVs or alternative screening levels and thus require further evaluation in the PHA process. For more information about potential COCs, please review this section of the 2022 PHAGM.

## The Accreditation of the PHA Training Modules 5 and 6 Has Been Renewed

The continuing education (CE) accreditation of the online Public Health Assessment Training (PHAT) Modules 5 and 6 has been renewed.  PHAT teaches the evaluation of exposure to hazardous substances by using ATSDR's method, known as the public health assessment or PHA.

**Module 5: Selection of Sampling Data** discusses when the environmental and biological data are considered appropriate to be used in the PHA and how to make this decision.

**Module 6: Data Screening Analysis** explains ATSDR's screening analysis and how to sort through the sampling data and identify those contaminants of concern that need to be evaluated more closely.

**To register for PHAT Modules 5 and 6:**

You can access the PHAT modules **here** and register in CDCTRAIN to complete their content.

**To obtain CE:**

- For Module 5: Selection of Sampling Data:

    o Click on "Get CE" in CDCTRAIN. This will take you to TCEO where you can follow these **9 Simple Steps** to obtain CE before June 25, 2024**.** Use the new ID for Module 5: WB4284R

- For Module 6: Data Screening Analysis:

    o Click on "Get CE" in CDCTRAIN. This will take you to TCEO where you can follow these **9 Simple Steps** to obtain CE before August 16, 2024. Use the new ID for Module 6: WB4294R

If you have any questions, please contact Sandra López-Carreras at spc0@cdc.gov.


# Retirement of Dr. Greg Ulirsch

Dr. Greg Ulirsch, Office of Community Health Hazard Assessment, ATSDR, retired after almost 35 years of federal service, all with ATSDR. During his stellar career, he has worked on several high-profile sites, developed many guidance documents and tools, led the modernization of web-PHAGM, and served as one of ATSDR's leading experts for public health assessment. In addition, he conducted numerous trainings for ATSDR and state partners to help them better understand the public health assessment process, including the 7-part Public Health Assessment training webinars in April to June 2022. He has also been the lead for this Health Assessor Newsletter series up until his retirement.

We sincerely thank Greg for his work and wish him much fun and success in his new adventures!

Drs Greg Ulirsch (center), Zheng (Jane) Li (left), and David Mellard (right) on Greg's last day at work.



Image of Drs. Li, Ulirsch, and Mellard taken by Annmarie DePasquale and used with permission.