ATSDR Newsletter for Health Assessors Including APPLETREE Partners

January 2022

Guidance & Clearance News

The purpose of this newsletter is to keep you informed about the 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 Site Tool (PHAST) resources page under the heading of ATSDR Health Assessor Newsletter.

Tips on Assessing Vapor Intrusion Lines of Evidence

Determining exposures from the vapor intrusion (VI) pathway involves looking at many types of information. The most important lines of evidence are high-quality quantitative measured data that can be used to estimate exposure point concentrations (EPCs) and differentiate indoor contamination from VI versus indoor or outdoor background sources. Vapor intrusion is episodic, with the majority of exposure occurring from a few days of high-concentration events (3.5% of days in one study [Schuver 2020]). Therefore, other lines of evidence help characterize the overall potential for VI. ATSDR finds some lines of evidence have greater importance (i.e., have greater weight) when determining a building's VI potential.

Most Important Lines of Evidence

Line of Evidence	How the Evidence is Useful
Seasonal, concurrent indoor air, sub-slab soil gas, and outdoor air chemical concentrations (ideally sampled while using indicators, tracers, and surrogates to assess whether VI is active or dormant during sampling)[1]	Quantitatively characterizes the source in different media (e.g., contaminants travel from areas of high concentration to areas of low concentration). Seasonally measured indoor air data (in hot and cold weather) allows EPC determination.
Trend plots of shallow groundwater and near-source soil gas well concentrations; hydrogeology from the source area to the building	Characterizes the strength, location, and migration of the source relative to the building. Looking at soil strata, like low-porosity clay lenses, can help explain contaminant migration.
Preferential pathways, such as sewer lines or lateral drains, especially those passing through or over areas of shallow groundwater contamination and connecting to the building	Indicates potential for substantially increased VI. This may support special sampling recommendations [ESTCP 2018, DoD 2017].
Forensic background analyses: attenuation factors[2] and enrichment factors[3] calculated by comparing measured subsurface and outdoor air to indoor air concentrations	Differentiates between background (indoor or outdoor) sources versus VI.

[1] Temperature Measurement Fact Sheet, Pressure Measurement Fact Sheet, Radon Methods Fact Sheet

[2] An attenuation factor is the ratio of a contaminant's indoor air to subsurface (soil gas or groundwater vapor) concentration. Similar contaminants having greater attenuation factors within a sample likely had an increased indoor air concentration due to a background source.

[3] Also known as "constituent ratios" within samples. Refers to the comparison of contaminant concentration ratios (e.g., TCE to cis-1,2-DCE) between media (i.e., subslab gas to indoor air) to see if they are similar. If a background source contributes to (enriches) the concentration of one of the contaminants indoors, the ratios would be different between the media.

Important Lines of Evidence

Line of Evidence	How the Evidence is Useful
Comparing measured indoor air concentrations with model-predicted indoor air concentrations	Modeled and measured concentration agreement supports that the traditional VI scenario applies (diffusion from the source to the building envelope and entry into the building through small openings) and those inputs (i.e., soil type and air exchange rate) were appropriate.[4] Models such as Johnson and Ettinger provide a realistic range of indoor air concentrations to expect from groundwater or soil gas data but should not be used to make health calls without indoor air data.
Presence of features that increase air exchange rates (i.e., open bay doors, large ventilation fans in windows/doors)	Air exchange rate is a sensitive factor in VI. The effect of these features is difficult to quantify without specialized testing. Such features are used to qualitatively indicate that lower indoor air concentrations are expected.
Presence of mitigation with ongoing operation and maintenance	Systems such as sub-slab depressurization, indoor positive pressurization, and sealing support lower VI when accompanied by confirmation sampling and periodic monitoring that demonstrates performance.
Indoor product surveys prior to sampling events	Removal or identification of products with site-related contaminants decreases those background sources.

Less Important Lines of Evidence

Line of Evidence	How the Evidence is Useful
Comparing measured indoor air concentrations to those in general studies of indoor and outdoor background for similar buildings such as residences, schools, or offices	Background studies are useful for noting if site occupants are being more highly exposed than people in similar buildings in the general population. The use of background studies should include a limitation statement such as, "Background indoor air contamination depends on what materials and products are present at individual buildings, which can vary from location-to-location."
Exterior soil gas sampling	While exterior soil gas samples help identify areas of contaminant migration, they may underestimate

[4] Note: It is theoretically possible that multiple inputs could be incorrect but interact within the model to produce the correct result. Confirming this would require more in-depth study than is usually performed at sites.

	concentrations beneath buildings. Near-source soil gas samples are more reliable than shallower ones. USEPA recommends collecting exterior soil gas samples from a minimum of 5' deep.
General characteristics of the building (e.g., size, HVAC, sealed expansion joints, exterior paving)	Size and foundation type are used in modeling VI. Other building characteristics are considered qualitatively. Extent of effect on VI must be verified by concurrent indoor air, sub-slab gas, and outdoor air sampling.

Based upon observations at many buildings and sites, EPA states,

> "The VI site where all available information is in agreement and is unambiguous may be the exception rather than the rule. Some lines of evidence may not be definitive (e.g., indoor air and subsurface concentrations can vary temporally and spatially by large amounts). At worse, some individual lines of evidence may be inconsistent with other lines of evidence" [EPA 2015].

In such cases, health assessors should acknowledge uncertainties or limitations with their conclusion(s) and may request additional data or information.

After evaluating exposures and reaching conclusions about each building's VI potential, ATSDR considers whether recommendations are appropriate. See Appendix A in ATSDR's Evaluating VI Pathways guidance for a more detailed list of VI lines of evidence, data quality considerations, and potential recommendations [ATSDR 2016]. This guidance is also located in the PHAST resource page along with other VI supporting documents.

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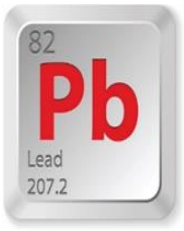
Tips for Evaluating Lead Exposures at Sites, Part 3: Integrating the New Centers for Disease Control's (CDC) Blood Lead Reference Value



Our series continues with Part 3 of tips for evaluating lead exposures. In this part, we take a closer look at background information on the derivation of the Centers for Disease Control and Prevention (CDC) Blood Lead Reference Value (BLRV), ATSDR's interim approach for using the BLRV in the U.S. Environmental Protection Agency's (EPA) Integrated Exposure Uptake Biokinetic model (IEUBK), and a summary of our overall approach for assessing lead exposures.

Background Information on the Derivation of the CDC BLRV

In 2012, CDC introduced a BLRV[5] to identify children with higher levels of lead in their blood compared to most children in the United States. The BLRV is based on the 97.5th percentile of the blood lead values among U.S. children ages 1-5 years from the two most recent National Health and Nutrition Examination Survey (NHANES) cycles. NHANES is a population-based survey to assess the health and nutritional status of adults and children in the United States and to determine the prevalence of major diseases and their risk factors. Children with blood lead levels at or above the BLRV represent those at the top 2.5% with the highest blood lead levels [CDC 2021a]. Every 4 years, CDC reanalyzes blood lead data from the most recent two NHANES cycles to determine whether the reference value should be updated [CDC 2021a, CDC 2021b].

On May 14, 2021, the federal advisory committee, called the Lead Exposure and Prevention Advisory Committee (LEPAC), unanimously voted to recommend that CDC update the reference value from 5 to 3.5 micrograms per deciliter (µg/dL) based on data from the two most recent NHANES cycles, specifically the 2015-2016 and 2017-2018 cycles. CDC officially adopted the recommended BLRV on October 28, 2021 [LEPAC 2021, CDC 2021c].

CDC's BLRV is a population-based measurement that is used to identify the 2.5% of children who have higher levels of lead in their blood compared with most children. The reference value is not health-based and is not a regulatory standard. States independently determine state action thresholds based on state laws, regulations, and resource availability. CDC encourages healthcare providers and public health professionals to implement the recommended follow-up actions based on confirmed venous blood lead levels [CDC 2021c].

How does CDC's new BLRV of 3.5 µg/dL affect ATSDR's Health Evaluations?

ATSDR will continue to

- Use the 5 µg/dL in the IEUBKv2.0 and EPA's adult lead model in our health evaluations until the BLRV of 3.5 µg/dL can be verified by EPA in their models, at which time ATSDR will revisit this approach.
- Incorporate a health equity-focused approach for evaluating lead exposures and provide a holistic approach for prioritizing actions to protect public health including:
    - Using social vulnerability factors as indicators for increased risk of elevated blood lead levels

[5] CDC replaced the term 'level of concern' with BLRV due to accumulating scientific evidence of adverse effects of BLLs below 10 µg/dL in children. The new term provides a shift to focus on primary prevention with interventions known to reduce lead exposure [ACCLPP 2012].

- Considering the contribution of non-site-specific lead sources
- Reviewing blood lead data from state and CDC programs as an indication of how widespread elevated blood lead levels may be in a community or region

For more information on how to incorporate these factors into your health evaluations, see Tips for Evaluating Lead Exposures at Sites Part 2, Know Your Community, published in the October 2021 ATSDR Health Assessor Newsletter.

- Incorporate language from CDC that defines and describes the new BLRV of 3.5 ug/dL (specifically mentioning that it is not a clinical health effect endpoint, but a tool based on a survey of children's blood lead level from across the United States). Specifically, ATSDR will include the following statement in our documents:

  > The BLRV is not a clinical reference level defining an acceptable range of blood lead levels in children nor is it a health-based toxicity threshold; rather it is a policy tool that identifies children who have higher levels of lead in their blood compared to most children to prioritize prevention efforts and evaluate their effectiveness. There are significant disparities in exposure and health outcomes across racial, ethnic, and socioeconomic status. By paving the way for early intervention and the prevention of additional exposure and associated harm, updating the BLRV supports the ATSDR's commitment to health equity and addressing environmental justice [CDC 2021c, LEPAC 2021].

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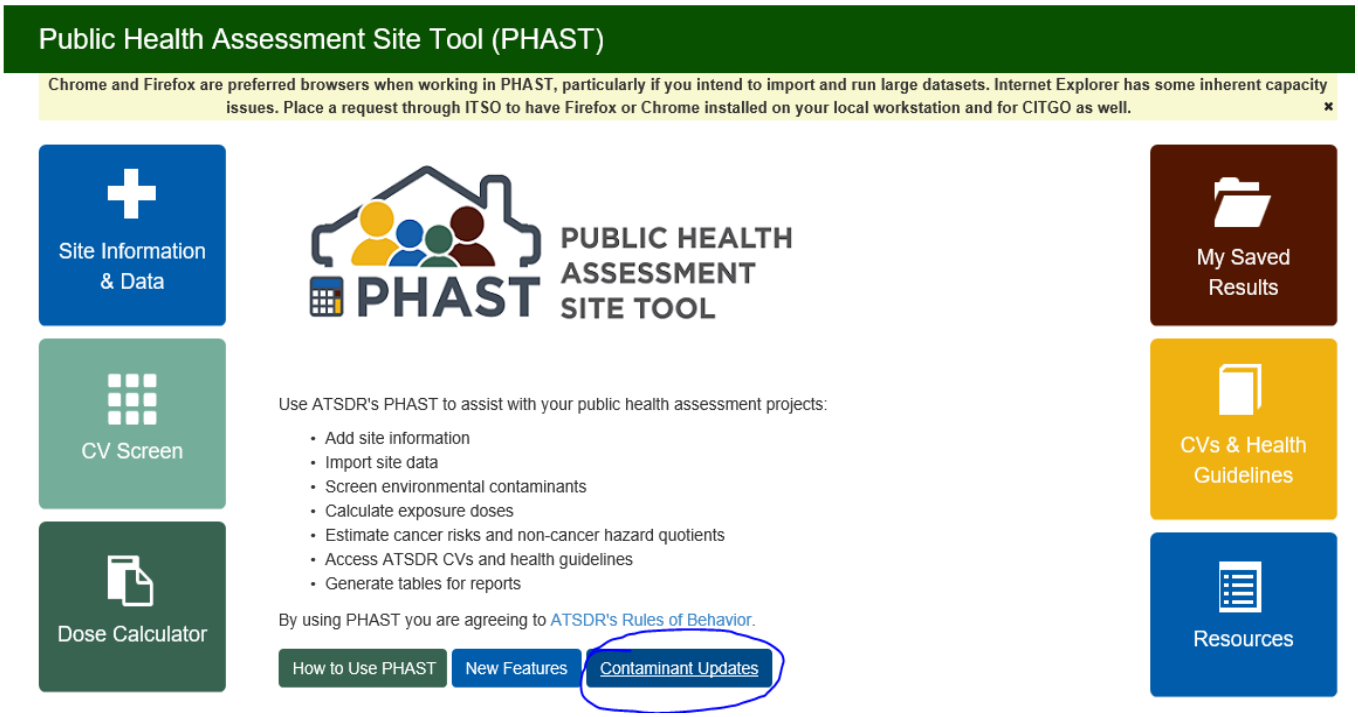
Did You Know? Hidden Gems in PHAST—Contaminant Updates

Did you know that PHAST is full of features that might be useful in your work? For instance, if you click 'contaminant updates' on the PHAST home screen, PHAST will bring up an Excel spreadsheet showing recent changes to the PHAST database. The spreadsheet on page 7 provides a sample of these changes.

So how can this be useful? If you have a document that's been under development for a long time, you can quickly see if and/or when new health guidelines or cancer toxicity values were updated in PHAST. If you find a recent change in a health guidelines or cancer toxicity values, which would indicate a change in the CV, you can check your document to see whether it's using the most current health guideline or comparison value. For example, the PHAST team may have decided that a health guideline like a reference dose (RfD) or reference concentration (RfC) should not be used. This can happen when an intermediate minimal risk level (MRL) is lower than the corresponding RfD or RfC for that chemical. In this case, the intermediate MRL is more health protective than the corresponding RfD or RfC, thus the intermediate MRL and not the RfD or RfC should be used to make health decisions. Another example might be if the PHAST team decides that a cancer slope factor (CSF) or inhalation unit risk (IUR) should not be used. This happened in February 2021 when EPA's cancer slope factor (CSF) for perfluorooctanoic acid (PFOA) was removed from the database.

If you find newly updated health guidelines or some other parameter that might have affected a PHAST calculation, you can decide whether to update the calculations in your document. Changes are documented back to May 2018 with the most recent changes being shown at the top of the Excel worksheet.



Contaminant Name	CAS Number	PHAST Data Field	Old Value	New Value	Date
2,3,4,6-tetrachlorophenol	58-90-2	Do not use RfD to calculate chronic hazard quotients	FALSE	TRUE	8/12/2021
2,3,4,6-tetrachlorophenol	58-90-2	Oral Intermediate MRL	NV*	0.01 mg/kg/day	8/2/2021
2,4-dichlorophenol	120-83-2	Oral Intermediate MRL	0.003 mg/kg/day	0.02 mg/kg/day	8/2/2021
4-chlorophenol	106-48-9	Oral Intermediate MRL	NV	0.9 mg/kg/day	8/2/2021
Disulfoton	298-04-4	Inhalation Acute MRL	6 µg/m³	0.6 µg/m³	8/2/2021
Pentachlorophenol	87-86-5	Oral Chronic MRL	0.001 mg/kg/day	0.005 mg/kg/day	8/2/2021
Pentachlorophenol	87-86-5	Oral Intermediate MRL	0.001 mg/kg/day	NV	8/2/2021
Aldrin	309-00-2	Oral Chronic MRL	3E-05 mg/kg/day	4E-05 mg/kg/day	7/30/2021
Acetone	67-64-1	Do not use RfD to calc chronic hazard quotients	FALSE	TRUE	7/30/2021
Acetone	67-64-1	Oral Intermediate MRL	2 mg/kg/day	0.6 mg/kg/day	7/30/2021
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	Molecular weight	500.13 g/mol	500.1249 g/mol	1/20/2021
Di(2-ethylhexyl)phthalate	117-81-7	Permeability coefficient	1.13 cm/hr	0.00015 cm/hr	11/9/2020
Di-n-octyl phthalate	117-84-0	Permeability coefficient	2.43 cm/hr	NV	11/9/2020
Chromium, hexavalent	18540-29-9	NIOSH cancer class	NV	OC	10/5/2020
Chromium, hexavalent	18540-29-9	IARC cancer class	NV	1	10/5/2020
Dibenzofuran	132-64-9	Dermal absorption fraction	0.03	0.1	5/19/2020
Furan	110-00-9	Vapor pressure	NV	600 mm Hg	5/19/2020
Furan	110-00-9	Dermal absorption fraction	0.03	0.0005	5/19/2020
2,3,7,8-TCDD TEQ	NULL-CAS-017	Contaminant Name	NV	new contaminant	4/13/2020

*no value

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How to Use the Terms "Comparison Values" and "Health Guidelines" in Public Health Documents

Recent reviews have shown an issue with correctly using the terms 'comparison value' (CV) and 'health guideline' in public health documents. In this article, we discuss the correct use and placement of each of these terms in public health documents like public health assessments (PHAs) and health consultations.

Comparison Values

ATSDR has developed several types of comparison values (CVs) for screening contaminants to identify contaminants of concern (CoC)[6]. ATSDR-derived CVs include

- Environmental Media Evaluation Guides (EMEGs)
- Reference Dose Media Evaluation Guides (RMEGs)
- Cancer Risk Evaluation Guides (CREGs)

ATSDR develops media-specific CVs for drinking water, soil, air, and VI (soil gas and groundwater). If you choose to use a screening value developed by another agency (e.g., EPA Regional Screening Level, or Cal EPA value), these values should be referred to as alternative screening values or just screening values and should not be referred to as comparison values or CVs. CVs are unique to ATSDR.

CoCs at a site are identified by comparing the recommended, media-specific CV with the maximum concentration detected in that media. Contaminant levels below CVs are screened out and not considered further. Contaminant levels greater than CVs are considered CoCs. Once CoCs are identified for specific media,

- data are grouped into exposure units (EU) within each pathway, and
- appropriate exposure point concentrations (EPCs) are derived for each pathway and EU.

All of these steps are covered in the public health assessment guidance manual (PHAGM) or in specific guidance documents, like the

- "EPC guidance for discrete sampling,"
- "Identifying exposure units for the PHA process," and
- the soon-to-be released "EPC Guidance for Non-discrete Sampling" (ATSDR 2019, 2021).

These documents are available in the resource section of the PHAST. PHAST is available to ATSDR's state partners through CDC's Secure Access Management Services (SAMS) and is available to ATSDR staff through CDC's Access Management Services. Send an email to phast@cdc.gov if you need access.

Here are a few rules to keep in mind as you use CVs in public health documents.

1. CVs should only be used to identify CoCs, which will be investigated further through a health evaluation. The health evaluation could result in calculating site-specific exposure doses (e.g., from

[6] CV units are in media specific concentrations such as parts per million (ppm), parts per billion (ppb), milligram per kilogram (mg/kg) or microgram per liter (ug/L).

drinking water or soil ingestion) or identifying site-specific exposure concentrations (e.g., from inhalation exposure).

2. It's very important to limit the discussion and use of CVs to that section of the document that identifies CoCs. Thus, the term CV, comparison value, or health-based comparison value should not be used in the health evaluation part of a document where you are deciding possible health effects. Health guidelines are used in the health evaluation discussion section.
3. CVs are used only to screen for CoCs. CVs should never be used to determine whether someone's exposure is a health concern or whether someone's exposure might result in harmful effects. CVs are not designed for this purpose.
4. CVs should generally not be mentioned in a summary because a CV should never be the basis for deciding possible harmful effects.

Health Guidelines

So, what should you use to make decisions about whether an exposure is a health concern or could cause harmful effects? As the initial step in making decisions about non-cancerous harmful effects, you will use health guidelines[7]. Health guidelines include the following:

- ATSDR's minimal risk levels (MRL)
- EPA's reference dose (RfD)
- EPA's reference concentration (RfC)

If site-specific doses or air concentrations exceed one of these health guidelines, you will conduct an in-depth toxicological evaluation to determine if doses or air concentrations approach or exceed harmful levels. This last step in the health evaluation is where you will decide if non-cancerous harmful effects might be possible. At this point, you will no longer use CVs or alternative screening values in making this decision about possible health effects.

It's important not to use the term 'health-based comparison value' in the health evaluation part of the document. The health evaluation section should use the term health guideline(s) when generally referring to MRLs and RfDs/RfCs or refer to the specific health guideline.

Cancer Evaluations

When available, carcinogenic chemicals are initially screened using CREGs, the CV for cancer endpoints. If a carcinogenic chemical is selected as a CoC, you will calculate site-specific cancer risks and consider the resulting cancer risk estimate in deciding if certain types of cancer might be possible in an exposed population. You should never use the CREG to make this decision. The document should never refer to CREGs in the health evaluation section where this discussion takes place because a CREG is a CV, not a health guideline. More information about evaluating cancer risk can be found in this newsletter in the article "Describing cancer risk in ATSDR's public health assessment documents."

If a cancer toxicity value like a cancer slope factor (CSF) or inhalation unit risk (IUR) is not available, the health evaluation section of the document should evaluate cancer qualitatively. This topic is covered in more detail in the February 2021 newsletter (Evaluating carcinogens without CREGs).

[7] Oral health guidelines are in dose units such as milligram per kilogram per day. Inhalation health guidelines are in units such as micrograms or milligram per cubic meter or parts per billion or million.

In summary, use the term "comparison value" or "health-based comparison value" only in that part of the document where the text is identifying contaminants of concern. Do not refer to CVs in the part of the document where the health evaluation takes place and where the text is describing possible health effects. Use the term "health guideline" in the health evaluation section or better yet refer directly to MRLs and, if needed, RfDs and RfCs. And finally, use 'cancer toxicity value(s),' when needed, as a general term for CSFs and IURs.

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Describing Cancer Risk in ATSDR's Public Health Assessment Documents

ATSDR evaluates the potential for a chemical exposure to result in cancer both quantitatively, as a theoretical risk, and qualitatively. The quantitative results describe the cancer risk numerically, such as three extra cancer cases for every 100,000 similarly exposed persons (3×10^{-5}). These theoretical risk estimates are calculated assuming people have the same exposures (e.g., the same soil concentration, soil ingestion rate, specified duration). These estimates do not represent individual cancer risks or account for variation in exposure in people living around a site. For example, a health assessor may use the following type of statement to convey cancer risk in a document:

> *Given the conservative nature of the cancer risk evaluation for pentachlorophenol, the estimated cancer risk is not a concern. Note that 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.*

The objective of the cancer risk estimate (quantitative) and hazard (qualitative) evaluation is to draw conclusions and make recommendations that will protect the public. The table below shows possible recommendations ATSDR may develop for each of the different cancer risk ranges. ATSDR makes recommendations to appropriate parties (e.g., federal, state, and local agencies; community members; tribal governments), which usually focus on these types of primary actions:

- Requesting appropriate parties take steps to stop, prevent, or reduce the public's exposure to environmental contaminants
- Educating healthcare professionals about environmental contamination in their communities, including cancer-causing contaminants
- Educating the public about actions they can take to reduce or stop exposures

If state policies are more conservative than the qualitative descriptors shown in the table that follows, ATSDR and its APPLETREE partners may consider those state policies when summarizing cancer risk. For example, some states are required to designate cancer risks greater than 1 in 1,000,000 (1×10^{-6}) as a health concern, while other states may designate 1 in 100,000 (1×10^{-5}) as a concern.

Health assessors may see theoretical cancer risks written in different ways. For example, the same numerical risk of 1 in 1,000,000 might be written as 1×10^{-6} or as 1E-6.

In general, our documents should avoid assigning quantitative cancer risks as low, moderate, or high increased risk of cancer. What might be low to some could be high for others. Instead, simply state whether or not there is a concern for increased cancer risk.

ATSDR **does not** have an acceptable cancer risk range. Therefore, health assessors should do the following:

- Avoid using phrases such as "the estimated cancer risk at this site of two in 100,000 similarly exposed persons is within the acceptable cancer risk range."
- Avoid stating that the estimated cancer risk is within EPA's acceptable cancer risk range of 1E-4 to 1E-6. EPA uses this cancer risk range to decide remedial clean-up actions at Superfund sites. ATSDR should not use this range as justification for what is an acceptable or not acceptable cancer risk, nor should we report EPA's language in our documents.

Use the following table that describes cancer risk ranges, qualitative descriptors, and possible recommendations.

Table 1. Quantitative Cancer Risk Range Estimates, Associated Qualitative Descriptors, and Possible Recommendations

Theoretical Risk Range		Qualitative Descriptor	Possible Recommendations
≤ 1E-6	≤ 1 in 1,000,000 persons similarly exposed	No concern for increased cancer risk	Usually none
> 1E-6 to < 1E-4	> 1 in 1,000,000 to < 1 in 10,000 persons similarly exposed	No concern for increased cancer risk* or A concern for increased cancer risk*	If you conclude that there is no concern for increased cancer risk, there are usually no recommendations. However, you could consider public education in ways to reduce exposure or continued monitoring, particularly if the contaminant could migrate and persons could be exposed to higher levels. If you conclude that there is a concern for increased cancer risk, consider the recommendations below.
≥ 1E-4	≥ 1 in 10,000 persons exposed	A concern for increased cancer risk	Recommendations that you could consider: • Provide suggested ways that entities could mitigate (as much as possible) the public's exposure to environmental carcinogens.

			• Educate healthcare professionals about environmental carcinogens in their communities. • Educate the public about actions to reduce their exposure to environmental carcinogens.

*Depends upon your evaluation and whether you decide there is either a concern or not a concern for an increased cancer risk.

The list below presents some issues to consider when deciding whether cancer risks between 1E-6 and 1E-4 are either a concern or not a concern:

- Is the carcinogen a known human carcinogen?
- Are their temporal trends in the data that make you more or less concerned about the calculated cancer risk?
- Are sensitive populations being exposed who might already have an elevated cancer risk?
- Are children exposed early in life, particularly if that exposure involves mutagenic carcinogens?
- Are there data limitations that increase uncertainty (e.g., limited data requiring the use of a maximum concentration as the EPC)?
- Are people exposed to multiple carcinogens as a mixture?
- Is there evidence of a threshold for a specific carcinogen?
- How much does natural background contribute to cancer risk?
- How much does anthropogenic background contribute to cancer risk?
- Are reliable health outcome data (HOD) on cancer rates available for the exposed population?

If you have questions on how to use the above criteria to make your final decision on whether cancer is or is not a concern, please contact your ADS office for assistance.

Before putting the recommended actions for appropriate parties in your site documents, have discussions with these parties to get their input and hopefully their agreement with the recommendations. You may be able to work with these groups on the specific phrasing of recommendations so that they agree to them, making the recommended actions more likely to be done. Identify the agencies for whom the recommendations are intended (e.g., ATSDR, a state environmental agency). And finally, include a discussion about uncertainty in cancer risk estimates along with the quantitative and qualitative description of cancer risk.

Contributing authors: Greg Ulirsch (gulirsch@cdc.gov) and Tonia Burk (tburk@cdc.gov), OCHHA and David Mellard (dmellard@cdc.gov), OCDAPS

New ATSDR Guidance Documents and Tools and Where to Find Them

Do you know where to find all the latest ATSDR guidance documents and PHA tools? The table below shows recently released guidance as well as tools coming soon!

All of the latest guidance documents are posted in the Resources Section in PHAST. In addition, all ATSDR Health Assessor Newsletters, and a list of current subject matter experts (SMEs), have been added to the Resources Section of PHAST. When the web-based Public Health Assessment Guidance Manual is launched, most guidance (including these newsletters) will be housed there. If you do not see guidance on a specific topic in the Resources Section in PHAST, contact the Office of Community Health Hazard Assessment (OCHHA) or the Office of Capacity Development and Applied Prevention Services (OCDAPS) ADS Office about that topic.

Guidance Topics/PHA Tools	Status	Point(s) of Contact
Shower Model PHAST Module	Spring 2022	David Mellard
EPC guidance for non-discrete sampling	Winter 2022	Greg Ulirsch; James Durant
EPC guidance for PAHs	Winter 2022	Greg Ulirsch; James Durant
R EPC Tool	Spring 2022	Greg Ulirsch; James Durant
Web-based PHAGM launch	Spring 2022	Greg Ulirsch

"A Few Closing Notes"

Note #1: Did you ever wonder how to best cite one of ATSDR's webtools, like PHAST, in your document? Here is an example of how to do that:

"Health assessment calculations were performed using ATSDR's PHAST (PHAST; version 2.0; ATSDR, Atlanta, GA)"

This same approach can be applied to other ATSDR webtools you might cite in your documents.

Note #2: Did you see the updated links for the PHA webinars? The October 2021 ATSDR Newsletter for Health Assessors Including APPLETREE Partners includes an article on ATSDR's online Public Health Assessment Training and links to the nine PHA webinars on the PHA process. These links needed to be updated, so a revised newsletter was added to the PHAST Resources page.

Note #3: Enhance public health assessments with GROW– a new cross-office collaboration.

A new cross-office workgroup will advance data analytics and geospatial support to ATSDR's site work. It includes team members from the Geospatial Research, Analysis, and Services Program (GRASP), OCHHA's

Exposure Investigation section, and OCHHA health assessors are working together through the GRASP/OCHHA Working Group, better known as GROW. The group meets each month to explore new ideas, bring additional data analysis and data visualization expertise to health assessments, and enhance the scientific integrity of ATSDR's public health assessment process and community response through cross-office collaboration.

Additionally, health assessors facing complex spatial or analytical challenges may reach out to GROW directly (ATSDR health assessors) or through their TPO (state health assessors) to request technical assistance.

To learn more about GROW, please email Caitlin Mertzlufft (iwe5@cdc.gov) or Lydia Hoadley (nrd2@cdc.gov).

Section References

Tips on Assessing Vapor Intrusion Lines of Evidence

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Tips for Evaluating Lead Exposures at Sites, Part 3: Integrating the New Centers for Disease Control's (CDC) Blood Lead Reference Value

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