



Issues & Trends

November 16, 2021

Vapor Intrusion:
Revised Guidance, Recent
Training and Rule Reminders

Zoom

- No video, please.
- Lines are muted.
- Questions?
 - Raise hand or use chat feature.
- Technical problems?
 - [Zoom.us](https://zoom.us) for help.



2021 Issues & Trends

□ Schedule at:

dnr.wisconsin.gov/topic/Brownfields/Training.html

□ Stay updated via the RR Report:

https://public.govdelivery.com/accounts/WIDNR/subscriber/new?topic_id=WIDNR_567



Today's recording and previous
webinars at:

[dnr.wisconsin.gov/topic/Brownfields/Training
Library.html](http://dnr.wisconsin.gov/topic/Brownfields/TrainingLibrary.html)



Jodie Peotter

Chief - Brownfields, Outreach and Policy Section



Permanent Rule Changes in Effect

- Two New Chapters to NR 700-799 Wis. Adm. Code - Chapters NR 756 and NR 758
- Financial assurance requirements that apply at certain types of sites with contaminated sediment.



Staff Updates

□ Issac Ross, South Central Region Supervisor

Issac.Ross@Wisconsin.gov

(414) 750-7140



□ Vapor Intrusion Expert - Southeast Region



EPA Grants

- State Acknowledgement Letters
- Requests due 11/17
- Send requests to:

Gena Larson

Gena.Larson@wisconsin.gov



Online Reporting

- Notification for Hazardous Substance Discharge Form – Non-emergency Only (4400-225)
- Now online
- RR Program Submittal Portal:
<https://dnr.wisconsin.gov/topic/Brownfields/Submittal.html>



Publications Now Available

- RR-0138, CERCLA Sec. 128(a) Grant Final Report (Oct 2020 – Sept 2021)
- Previous reports at:
dnr.wisconsin.gov/topic/Brownfields/RRProgram.html



Publications Now Available

Letter Templates:

- RR-0133 - *Notification of Drinking Water Sample Results*
- RR-0134 - *Notification of Drinking Water Sample Results (No Exceedance)*



Publications Now Available

- RR-0126 - *Guidance for Sediment-Related Continuing Obligations for Environmental Protection, Wis. Stat. § 292.12(5m)*
- RR-0117 - *Guidance: When should a site investigation enter surface water?*
- Coming Soon: RR-619 - *Guidance: General Liability Clarification Letters*



Publications – Public Comment Soon

- RR-060 - *Guidance for Management of Contaminated Soil and Other Solid Wastes - Wis. Admin. Code §§ NR 718.12 and NR 718.15*
- RR-800 - *Addressing Vapor Intrusion At Remediation And Redevelopment Sites In Wisconsin*
- RR-0124 - *Guidance on Addressing Contaminated Sediment Sites in Wisconsin*



For Upcoming Guidance Documents

□ Public Comment:

<https://dnr.wisconsin.gov/topic/brownfields/publicnotices.html>

□ Notified via RR Report:

https://public.govdelivery.com/accounts/WIDNR/subscriber/new?topic_id=WIDNR_567



Jennifer Borski

Dry Cleaning and Vapor Intrusion Team Leader

Jim Walden

Vapor Intrusion Technical Expert

Curtis Hedman

DHS Toxicologist



Vapor Intrusion – Revised Guidance, Recent Training and Rule Reminders

Issues & Trends – November 16, 2021

Jennifer Borski, DNR Vapor Intrusion Team Leader

Jim Walden, DNR Vapor Intrusion Technical Expert

Curtis Hedman, DHS Toxicologist

Agenda

- Recent Vapor Intrusion Outreach & Education
- Guidance Announcement & Updates
- Rule Reminders
- DNR / DHS / Local Health Partnership
- Vapor Intrusion Prevention Toolkit – DHS
- Q & A

Vapor Intrusion Outreach & Education 2020 - 2021

- [2020-2021](#) – Issues & Trends VI Webinars
- [Dec. 2020](#) – ITRC: Vapor Intrusion Mitigation (VIM) Doc & Internet Based Training (IBT) June 2021 (recorded) & Sept. 2021
- [Apr. 6, 2021](#) – Statewide VI & TCE letter to all open sites (uploaded)
- [2021](#) - Addition of “Health” tab on VI Resources for Environmental Professionals website: <https://dnr.wisconsin.gov/topic/Brownfields/Vapor.html>



2020-2021 Issues and Trends VI Webinars

<https://dnr.wisconsin.gov/topic/Brownfields/TrainingLibrary.html>

ISSUES AND TRENDS WEBINARS

The issues and trends training sessions cover a variety of technical and policy issues affecting environmental practitioners, local government specialists and others whose work involves assistance or oversight by the RR Program.

2020-2021 SERIES

Date	Presentation	Audio/Video
4/20/21	Vapor Intrusion: Acute Risks Associated with TCE [PDF]	Webinar recording [VIDEO Length 54:33] [exit DNR]
3/16/21	BRRTS on the Web (BOTW) Updates and Highlights of the RR Sites Map (RRSM) User Survey [PDF]	Webinar recording [VIDEO Length 1:00:46] [exit DNR]
12/16/20	Vapor Intrusion: Screening and Mitigation Decisions, Scope and Timing [PDF]	Webinar recording [VIDEO Length 54:11] [exit DNR]
11/18/20	Site Investigation: Scoping, RR's SI Toolkit and Related Documents, SIR/SIWP Checklist and more [PDF]	Webinar recording [VIDEO Length 49:40] [exit DNR]
10/21/20	PFAS: Fate and Transport, Site Characterization and Remediation	Webinar [VIDEO Length 1:00:28] [exit DNR]
9/17/20	RR Program Updates: Learn what's new with the RR Program, including the Submittal ePortal, NR 700 Rules and RR Sites Map [PDF]	Webinar [VIDEO Length 57:08] [exit DNR]
7/15/20	Vapor Intrusion: New Preferential Pathways [PDF]	Webinar [VIDEO Length 40:51] [exit DNR] Q&A Session [VIDEO Length 14:03] [exit DNR]

Pre-training on RR-649 published June 2021

Apr. 6, 2021 – Statewide VI & TCE Letter

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
101 S. Webster Street
Box 7921
Madison WI 53707-7921



Tony Evers, Governor
Preston D. Cole, Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711

April 6, 2021

«RP_NAME»
«RP_ADDR1»
«RP_ADDR2»
«RP_CITY» «RP_STATE_ABBR» «RP_POSTAL_CODE»

Subject: Vapor Intrusion – Short Term Risks for Trichloroethylene Vapors, Vapor Intrusion Pathway Assessment, and Immediate and Interim Actions
«ACTIVITY_DETAIL_NAME»
«LOC_ADDR», «LOC_CITY», WI
BRRTS # «ACTIVITY_DETAIL_NO», «FID_NUMBER»

Dear Sir or Madam:

This letter is being sent to all Responsible Parties (RPs) that currently have an active contamination response site on the Department of Natural Resources (DNR's) Bureau for Remediation and Redevelopment Tracking System (BRRTS). It reiterates and enhances information about vapor intrusion risk that has been previously provided to you by DNR, either in a letter sent by DNR in 2011 regarding assessment of the vapor pathway or in your responsible party letter if your case was opened after 2011. Recent studies indicate that vaporized trichloroethylene (TCE) in indoor air is more toxic than previously understood and the risk posed by TCE vapors requires an immediate response when women of child-bearing years are present.

The purpose of this letter is to communicate three points related to vapor intrusion:

1. **TCE poses short-term risks to human health that justify accelerated assessment, investigation and mitigation of the vapor intrusion pathway.**
2. Assessment of the vapor intrusion pathway is part of the investigation process and should be assessed as early as possible and routinely re-assessed throughout the life of a project.
3. Immediate and interim actions may be necessary early in the site investigation process to protect human health from contaminated vapors.

We encourage you to discuss this information with your environmental consultant. The DNR believes the health risks of TCE vapors are serious enough that it should be one of *the first things* evaluated as part of a site investigation, especially at sites where contamination may impact sensitive populations. RPs should be diligent about screening for TCE in vapors as early in the site investigation process as possible, to determine if immediate actions are warranted to reduce harmful exposure.

Unfortunately, many RPs and consultants wait until late in the site investigation process, or even at case closure, before taking steps to assess the presence of vapors and any needed mitigation efforts. We are encouraging you to do this as one of the first steps in your site investigation.

Health Risk

All volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), some metals (e.g., mercury) and methane have the potential to create harmful vapors with varying degrees of toxicity. Some compounds produce an odor, such as gasoline, but many do not, making expedited assessment critical to identifying exposure. Preferential pathways such as sewers allow vapors to travel long distances from the source in multiple directions, increasing the possibility of exposure to humans. Additional information on the human health hazards from vapor intrusion can be found by going to dnr.wi.gov, search "Vapor" and go to the "Health" tab.

The VOC, trichloroethylene (TCE), poses a short-term (i.e., acute) health risk in indoor air at certain concentrations that justifies expedited assessment, investigation and mitigation as immediate or interim actions (USEPA, 2014; Makris et al., 2016). As discussed in DNR vapor intrusion guidance (see below), quickly identifying demographics is a key component of the risk assessment. This is supported by the Department of Health Services. TCE also poses a long-term (i.e., chronic) health risk.

TCE is a chlorinated solvent commonly used as a parts washer and degreaser of metal equipment. It is also used for spot cleaning and found in household items such as aerosols. TCE is also a breakdown product of tetrachloroethylene (PCE or "perc"). PCE is a chlorinated solvent used in commercial and industrial businesses such as dry cleaners, metal plating, paper mills, etc. When released to the environment, PCE, TCE (either as a source or a breakdown product) and other contaminants readily migrate through soil, groundwater and subsurface air.

Authority – Assessments and Interim and Immediate Actions

Assessment of the vapor intrusion pathway is a critical part of an environmental investigation. Wisconsin Administrative Code (Wis. Admin. Code) Chapter NR 716 outlines the requirements for investigation of contamination in the environment. Specifically, Wis. Admin. Code § NR 716.11(3)(a) requires the field investigation "determine the nature, degree and extent, both areal and vertical, of the hazardous substances or environmental pollution in all affected media," which includes sub-surface and indoor air. In addition, Wis. Admin. Code § NR 716.11(5) specifies that the field investigation include an evaluation of the "potential pathways for migration of the contamination, including drainage improvements, utility corridors, bedrock and permeable material or soil along which vapors, free product or contaminated water may flow."

A vapor intrusion pathway assessment may demonstrate that an immediate or interim action is required under Wis. Admin. Code ch. NR 708. Wis. Admin. Code § NR 708.05(2) states "for hazardous substance discharges that pose an imminent threat to public health, safety or welfare or the environment, responsible parties shall conduct all necessary emergency immediate actions." Under Wis. Admin. Code § NR 708.11(1), appropriate interim actions must be taken when "necessary to... minimize any threat to public health, safety or welfare or the environment" and could include "constructing a temporary engineering control, such as low permeability cover, or installing and operating a vapor mitigation system" per Wis. Admin. Code § NR 708.11(2)(d).

Immediate and interim actions, such as installation of a vapor mitigation system, can be taken to interrupt human exposure. However, interim actions are not acceptable long-term remedies. Wis. Admin. Code chs. NR 722, 724 and 726 address required cleanup actions to address the sources of contamination. More specifically, Wis. Admin. Code § NR 726.05(8)(b)1, states a site is not eligible for closure until "a remedial action has been conducted and reduced the mass and concentration of volatile compounds to the extent practicable."

Guidance and Evolution of Vapor Intrusion Science

The DNR publishes guidance to help RPs and their consultants comply with the requirements in Code. *Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin*, RR-800 (v. January 2018) can be found at <https://dnr.wi.gov/files/PDF/pubs/rr/RR800.pdf>. As noted above, the presence of TCE may present specific concerns related to demographics. Section 3.4.1 of DNR's guidance discusses the need to quickly identify demographics and prioritize action when TCE is the contaminant of concern. Section 7.1 discusses potentially appropriate immediate actions necessary to limit exposure.

The science of vapor intrusion continues to rapidly evolve. The mechanics of vapor intrusion and risks to human health are being continually researched and discussed on a national and international level. This constant increase in knowledge requires the vapor intrusion pathway to be routinely reassessed throughout the life of a project until case closure. Therefore, in addition to RR-800, the DNR provides videos, fact sheets and additional guidance on vapor intrusion on its website. Go to dnr.wi.gov and search "Vapor." Technical resources developed by other government and private sources are included.

The DNR will continue to update its resources to incorporate advances in science on assessment, investigation and mitigation options, to partner with local and state health departments on the risks to human health, and to routinely communicate with environmental consultants on these advances.

If you have questions regarding this letter, please contact the assigned DNR Project Manager or DNR Site contact:

«PM_FULL_NAME»
«PM_PHONE_MAIN»
«PM_EMAIL»

Sincerely,

Christine Haag
Program Director
Remediation & Redevelopment Program

CC: «CONSULT_NAME», «CONSULT_COMPANY»

Guidance Announcement & Updates

- [ITRC – Vapor Intrusion Mitigation \(VIM\) Doc](#) (Dec. 2020) & Internet Based Training (IBT) (Jun. 2021 recorded & TBA for 2022)
- Preferential Pathways, [RR-649](#) (rev. Jun. 2021)
- WI Vapor Quick Look-Up Table, [RR-0136](#) (rev. Sept. 2021)
- History of Changes to VALs, VRSLs & AFs, [RR-0137](#) (rev. Sept. 2021)
- [RR-800](#) (rev. Jan. 2018) revisions in progress

Guidance Announcement – ITRC: Vapor Intrusion Mitigation (Dec. 2020)

<https://vim-1.itrcweb.org/>

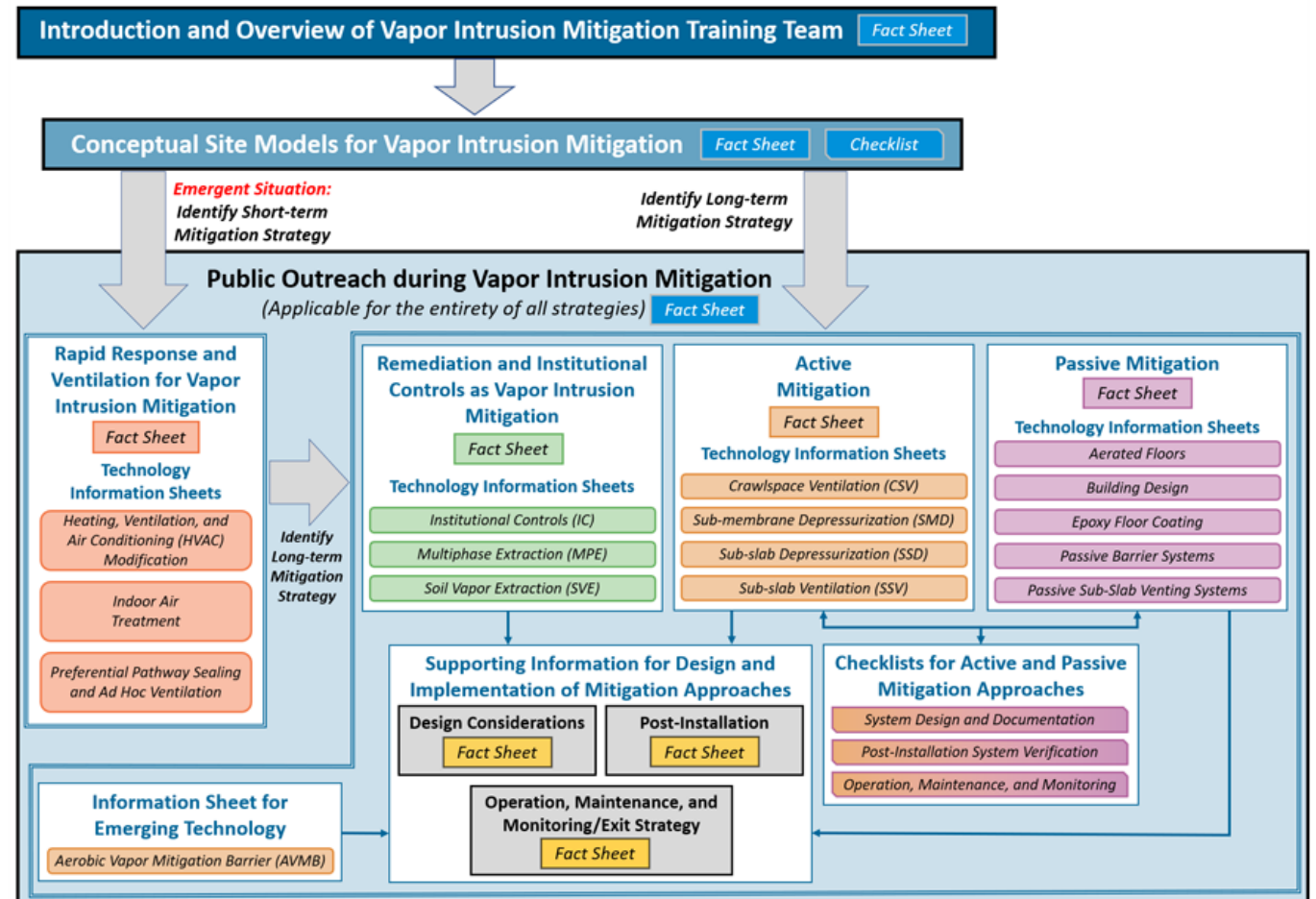
Internet-based training:

✓ Jun 1 / June 15, 2021 (recorded)

https://clu-in.org/conf/itrc/vim-1_061521/

✓ Sept 14 / Sept 28, 2021

- Jan 13 / Jan 27, 2022
- Jun 2 / Jun 14, 2022
- Nov 3 / Nov 15, 2022



Guidance Update – RR-649 (rev. June 2021)

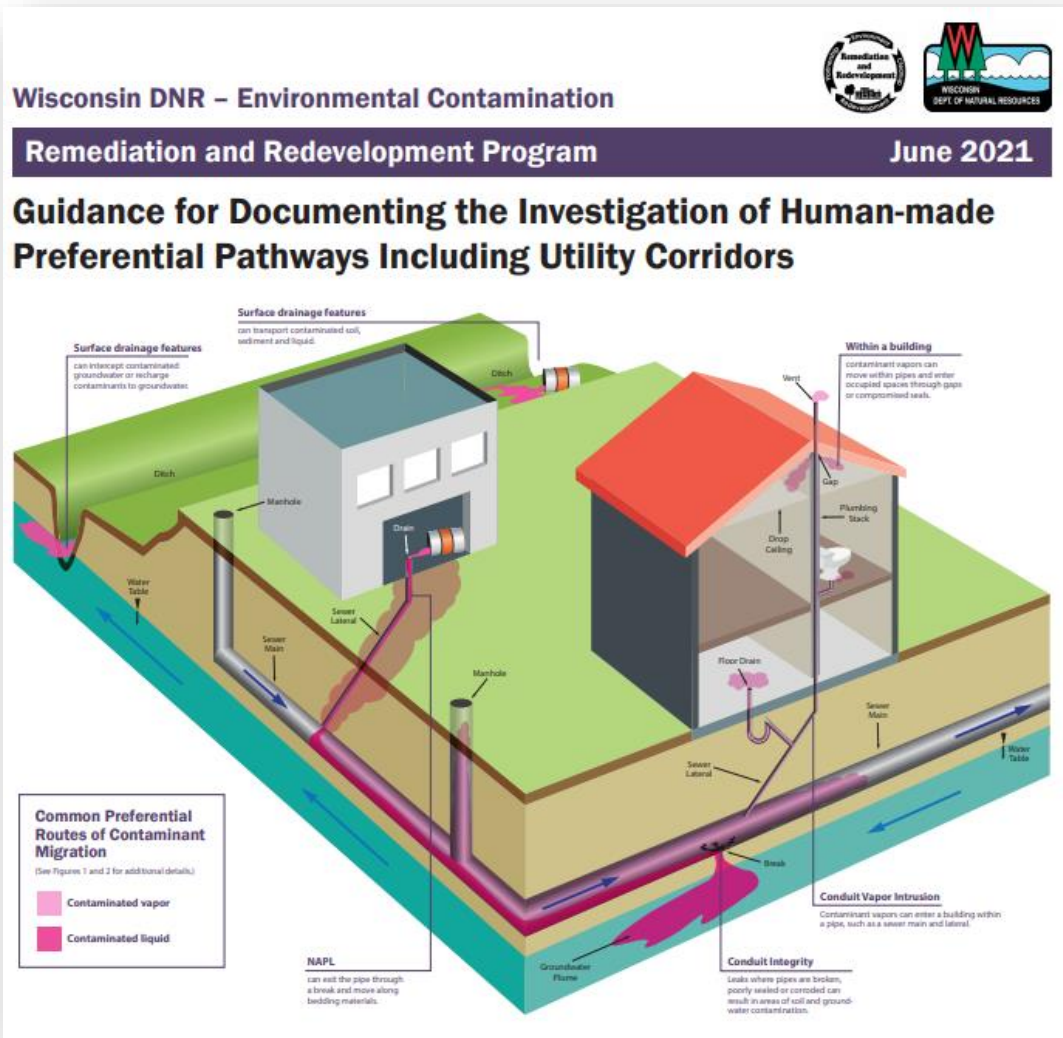


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Guidance Update – RR-649 (rev. June 2021)

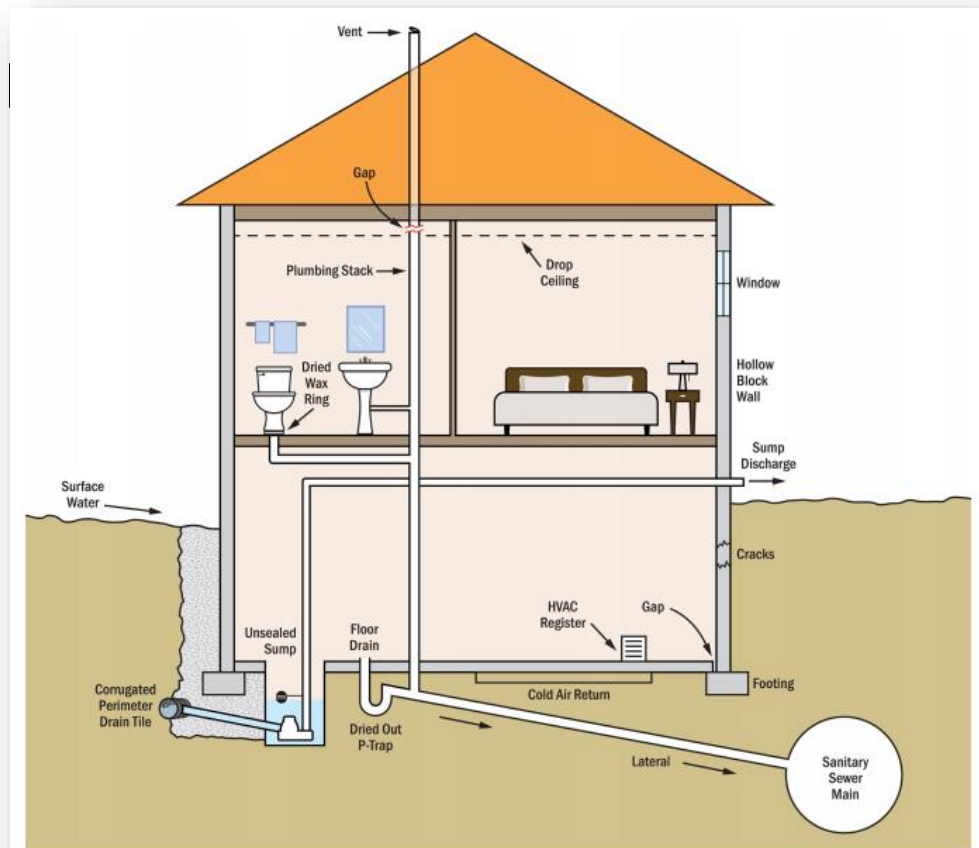


Figure 1: Examples of human-made preferential pathways — buildings

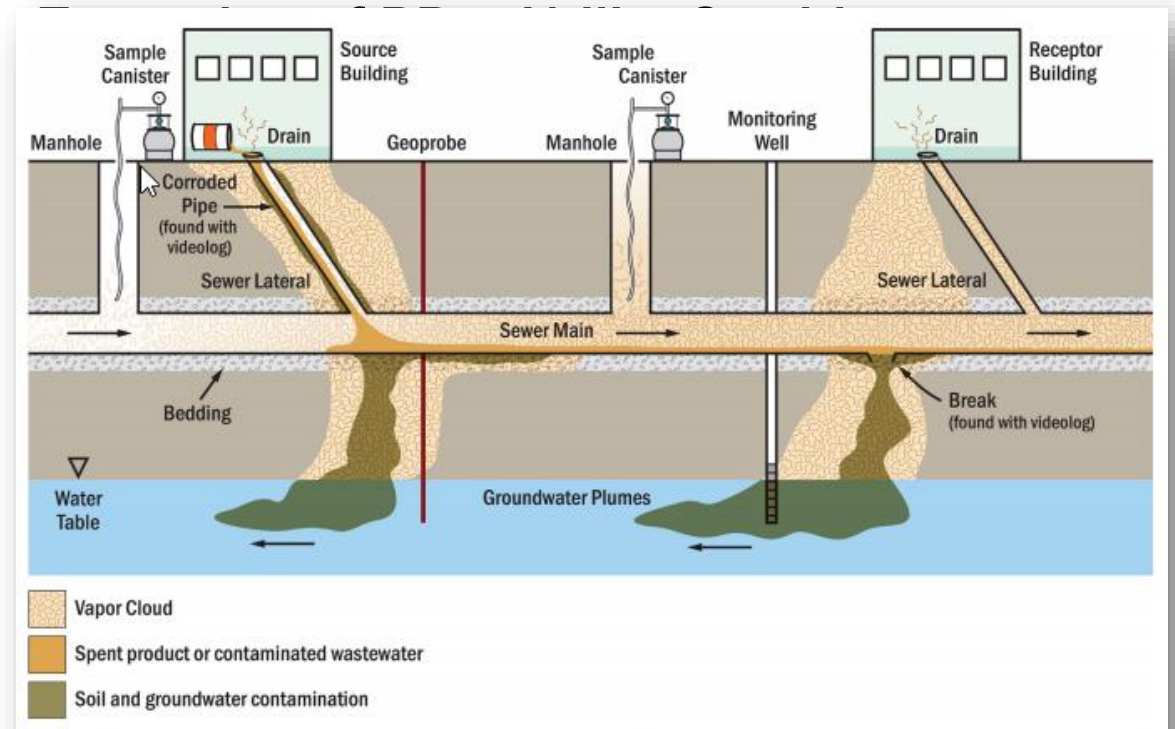


Figure 2. Examples of Preferential Pathways and Investigation - Utility Corridors

Guidance Update – RR-649 (rev. June 2021)

Examples of Human-made Preferential Pathways

Exterior Features

- Ditching
- Drain tile systems
- Dry wells
- Excavations
- On-site waste (septic) system tanks, pipes, drain fields
- Permeable trenches
- Sanitary sewers
- Storm sewers
- Tunnels
- Utility corridor bedding for gas, potable water, electricity, telecommunication, etc.

Building Features

- Cisterns (beneath basements)
- Crawl spaces
- Earthen floors
- Floor drains
- Foundation seams, joint, cracks
- Elevator shafts
- Heating, ventilation and air conditioning (HVAC) ducts, plenums
- Pipes
- Sumps and drainage pits
- Utility penetrations
- Wall voids (such as hollow cinder block)
- Waste lines

Guidance Update – RR-649 (rev. June 2021)

Sanitary sewer gas screening level (SSGSL)

Sanitary sewer gas screening level (or SSGSL) is the recommended concentration of vapors in a sanitary sewer main (typically collected from a manhole) to use in assessing whether to test nearby buildings for vapors. The concentration is determined by dividing the indoor air vapor action level (VAL) for buildings served by the sanitary sewer by 0.03.² This concept is similar to the sub-slab vapor risk screening level (VRSL). Unlike the sub-slab VRSL, the same 0.03 attenuation factor is used for all types of buildings because the sewer gas traps designed to prevent intrusion of sewer gases are similar for all types of buildings. However, because the VAL is different for residential versus non-residential properties, the SSGSL will also be different.

Sanitary Sewer Main Manhole Sampling

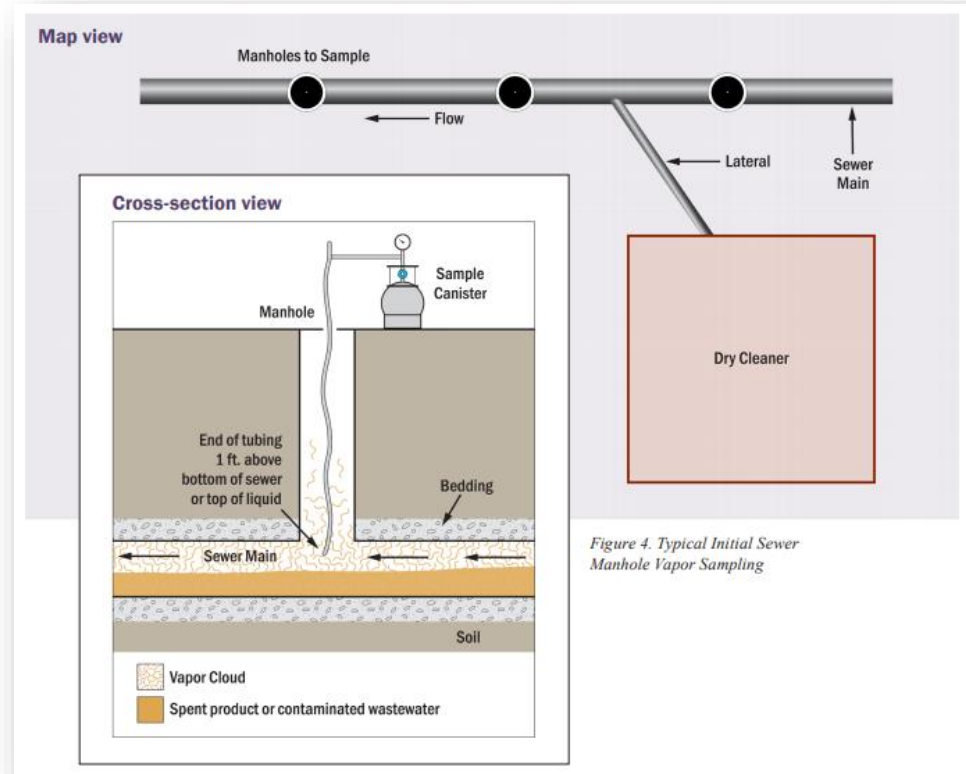


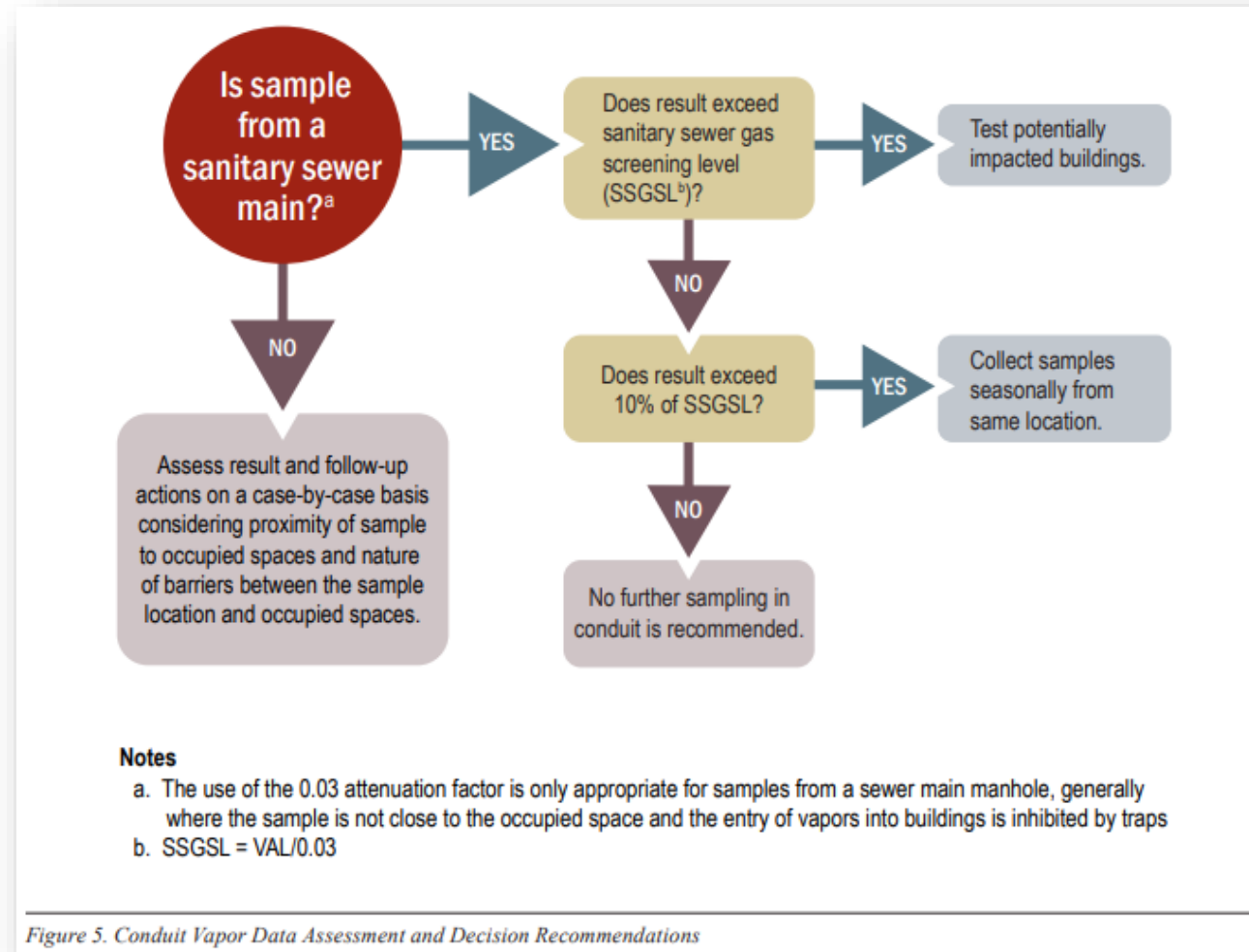
Figure 4. Typical Initial Sewer Manhole Vapor Sampling

Sidebar: Overview of Vapor Action Levels (VAL), Attenuation Factors (AF) & Vapor Risk Screening Levels (VRSL) (as of Nov 2021)

WI: Target Cancer Risk = 1×10^{-5} ; Hazard Index/Quotient = 1; VRSL = VAL / AF
 Refer to DNR RR-649, RR-800 & RR-0136 for additional details.

	Residential Use	Small Commercial	Large Commercial / Industrial
Indoor Air (VAL)	Residential	Non-Residential	Non-Residential
Crawl space AF	1	1	1
Open sump AF	1	1	1
Open pipe / dry p-trap AF	1	1	1
Sub-slab AF	0.03	0.03	0.01
Soil gas AF	0.03	0.03	0.01
Deep soil gas AF	0.01	0.01	0.001
Groundwater AF (except gw in contact with foundation & PCE/TCE)	0.001	0.001	0.0001
Sanitary Sewer Gas AF	0.03	0.03	0.03
Storm Sewer Gas AF	Not established	Not established	Not established

Guidance Update – RR-649 (rev. June 2021)



Guidance Update – RR-649 (rev. June 2021)

Applicable Action or Screening Levels and Suggested Sample Nomenclature

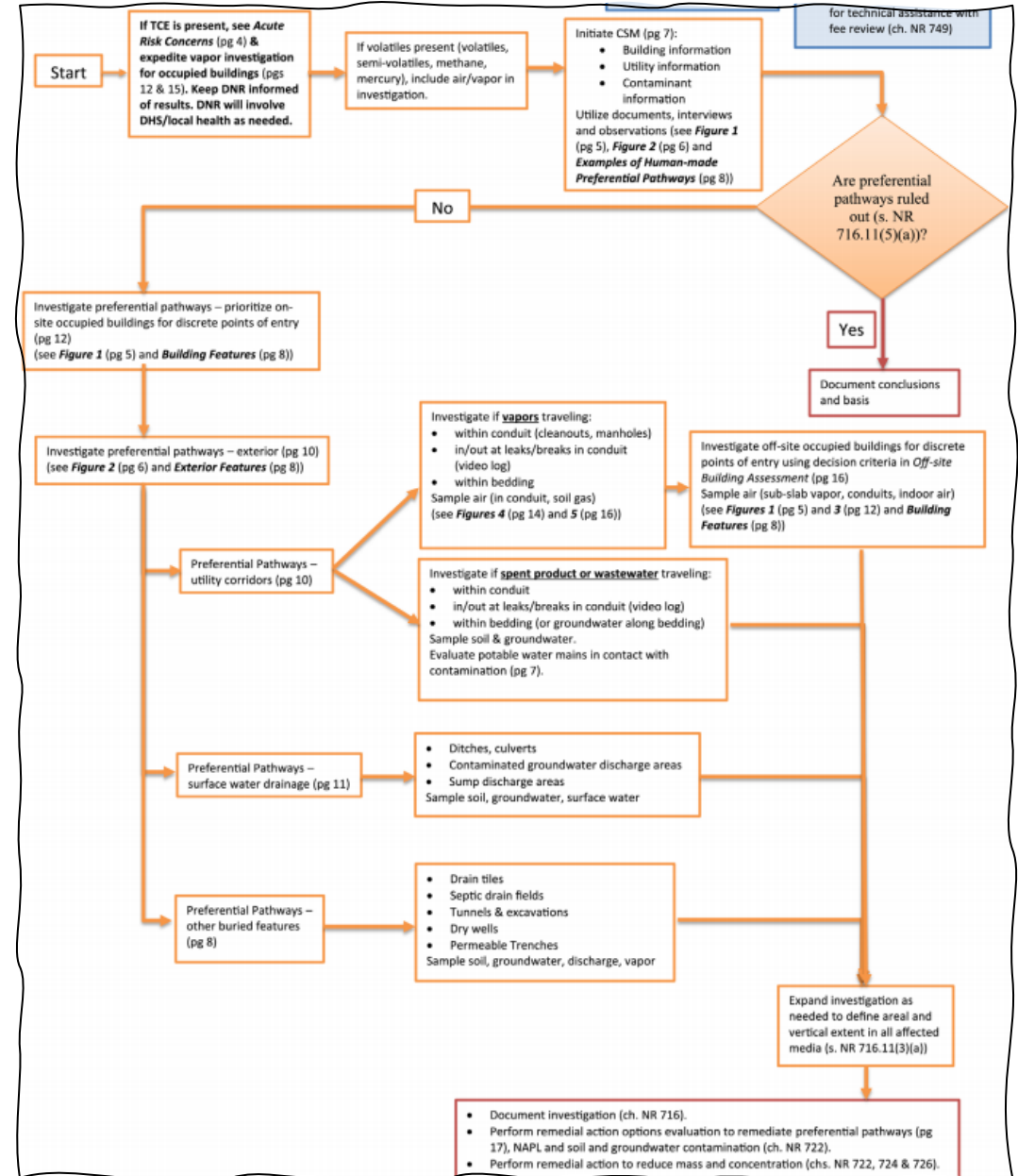
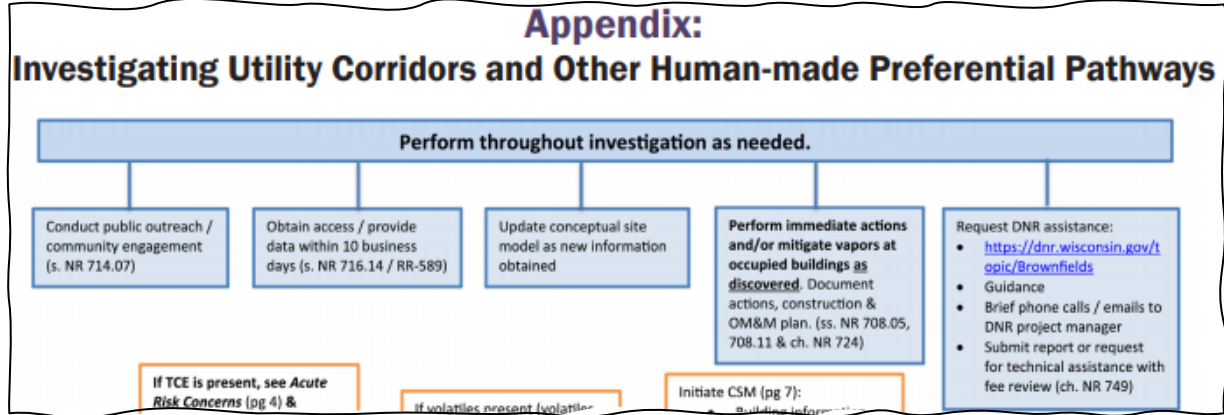
Sample Location	Action or Screening Level	Attenuation Factor	Suggested Sample Nomenclature	Additional Comments
Ambient / Indoor Air & Soil Gas Vapor				
Indoor Air (IA)	VAL	Not applicable – no attenuation	IA - # or Location (e.g., IA-1 or IA-break room)	Including basements, crawl spaces and conduits on the interior side of a p-trap (or without a p-trap)
Outdoor Air (OA)	Not applicable	Not applicable – no attenuation	OA - # or Location (e.g., OA-1 or OA-west)	Typically background outdoor air samples
Sub-Slab Vapor (SSV) (beneath the foundation)	VRSL	0.03 ^a / 0.01 ^b	SSV - # or Location (e.g., SSV-1 or SSV-utility room)	Includes vapor samples directly beneath a slab or membrane/vapor barrier
Sump (temporarily sealed for sample)	VAL	Not applicable – no attenuation	Sump - # or Location (e.g., Sump-1 or Sump-north)	
Conduit Vapor				
Floor Drain (FD) (behind p-trap)	Site-specific ^c	Site-specific ^c	FD - # or Location (e.g., FD-1 or FD-paint room)	
Lateral/Plumbing cleanout Gas (LPG) (behind p-trap)	Site-specific ^c	Site-specific ^c	LPG - Location (e.g., LPG-SSG lateral or LPG-vent pipe)	Includes sanitary sewer lateral, plumbing stack vent and plumbing clean-out
Sanitary Sewer Gas (SSG) (within utility main)	SSGSL	0.03	SSG - Location (e.g., SSG-MH-149 for manhole # 149)	

^a Residential use or small commercial building

^b Large commercial or industrial building

^c There are currently no set action levels, screening levels or attenuation factors for these scenarios.

Guidance Update- RR-649 (rev. June 2021)





Guidance Applied– RR-649 (rev. June 2021)

U.S. EPA in Flat Rock, MI for Emergency Response (Aug. 2021 Spill)

- U.S. EPA Website: https://response.epa.gov/site/site_profile.aspx?site_id=15330
- Story Map: <https://storymaps.arcgis.com/stories/5701c064d5e548b6bc7842f6015bc8eb>

Handheld Sensors

- MultiRAE
- AreaRAE
- UltraRAE



U.S. Environmental Protection Agency

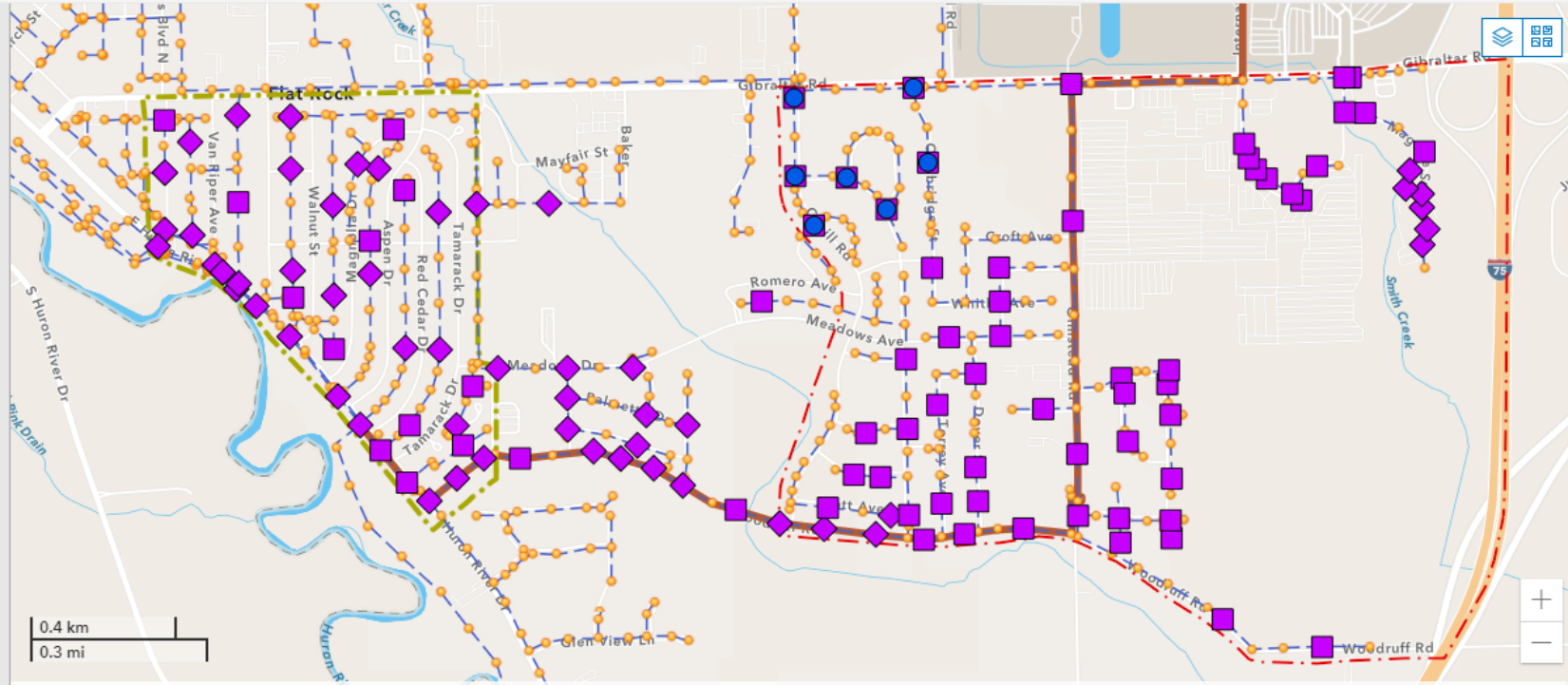
Trace Atmospheric Gas Analyzer (TAGA)

Self-contained mobile laboratory capable of real-time sampling and of outdoor air or emissions.



U.S. Environmental Protection Agency

Photos/slides
credit: USEPA Flat
Rock Emergency
Response
Presentation –
Sept. 16, 2021



<p>Location: SS03003 Benzene: 22.34 Toluene: 445.03 Xylenes: 3,626.42</p>
<p>Location: SS03004 Benzene: 20.36 Toluene: 393.25 Xylenes: 2,776.53</p>
<p>Location: SS03005 Benzene: 16.23 Toluene: 310.04 Xylenes: 1,996.99</p>
<p>Location: SS03006 Benzene: 13.95 Toluene: 268.52 Xylenes: 1,678.36</p>

GC/MS Sewer Sample Results (ppb)

<p>Location: SS03002 Benzene: Ethylbenzene: 6.50 Toluene: 3.72 m,p-Xylene: 4.39 o-Xylene: 17.29</p>
<p>Location: SS04004 Benzene: Ethylbenzene: 2.34 Toluene: m,p-Xylene: o-Xylene: 15.42</p>
<p>Location: SS04006 Benzene: Ethylbenzene: 2.14 Toluene: 0.20 m,p-Xylene: o-Xylene: 16.45</p>

- Ford Sanitary Sewer Sampling Locations
- GC/MS Sanitary Sewer Sample Locations
- TAGA Sanitary Sewer Sample Locations
- Sewer Covers
- Sewer Gravity Mains
- Sewer Pressurized Mains
- Approximate Zone 1 Boundary
- Approximate Zone 2 Boundary

[Click HERE to go directly to the EPA response site for more information.](#)

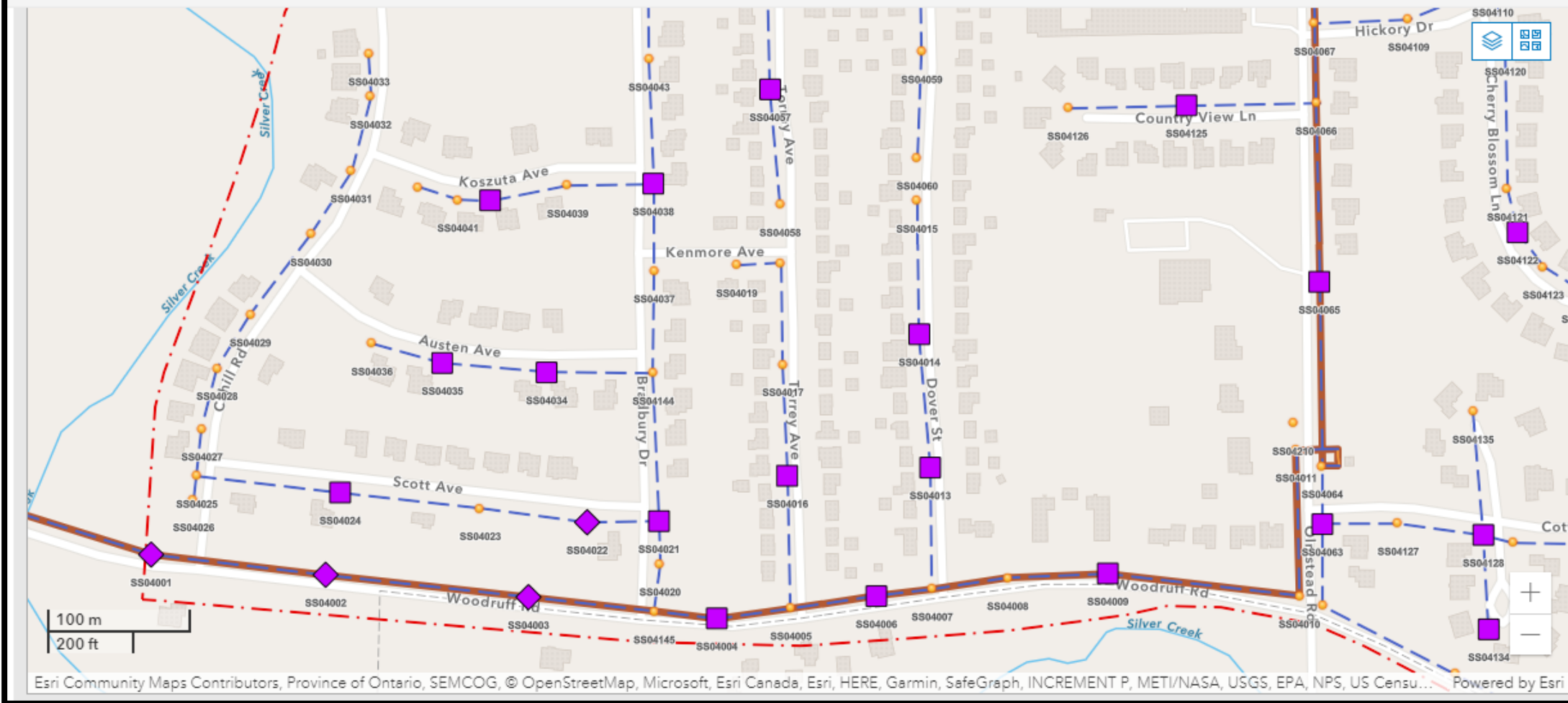
NOTE: Results reported directly as they are measured in the field, and are considered preliminary. TAGA and GC/MS data are subject to review by a qualified chemist before being considered final.

Definitions:
GC/MS - Gas chromatography/mass spectrometry
TAGA - Trace Atmospheric Gas Analyzer

Result Qualifiers:
U - The compound was not detected.

TAGA and GC/MS Sanitary Sewer Samples	Ford Sanitary Sewer Samples
124	7

Screen shot from USEPA Story Map 10/28/2021: <https://storymaps.arcgis.com/stories/5701c064d5e548b6bc7842f6015bc8eb>



Screen shot from USEPA Story Map 10/28/2021: <https://storymaps.arcgis.com/stories/5701c064d5e548b6bc7842f6015bc8eb>

Guidance Update – RR-0136 (rev. Sept. 2021)

Guidance: Wisconsin Vapor Quick Look-Up Table ^{1, 2, 3} Indoor Air Vapor Action Levels and Vapor Risk Screening Levels (Based on **May 2021** J.S. EPA Regional Screening Levels)



Remediation and Redevelopment Program

September 2021

CHEMICAL	RESIDENTIAL				SMALL COMMERCIAL				LARGE COMMERCIAL/INDUSTRIAL				MOLECULAR WEIGHT	U.S. EPA RSL BASIS				
	AF = 0.03								AF = 0.01									
	INDOOR AIR VAL		SUB-SLAB VAPOR VRSL		INDOOR AIR VAL		SUB-SLAB VAPOR VRSL		INDOOR AIR VAL		SUB-SLAB VAPOR VRSL							
	µg/m ³	ppbv	µg/m ³	ppbv	µg/m ³	ppbv	µg/m ³	ppbv	µg/m ³	ppbv	µg/m ³	ppbv	g/mole					
Benzene	3.6	1.1	120	37	16	4.9	520	160	16	4.9	1,600	490	78.11	c				
Carbon Tetrachloride	4.7	0.73	160	25	20	3.1	680	110	20	3.1	2,000	310	153.82	c				
Chloroform	1.2	0.24	41	8.3	5.3	1.1	180	36	5.3	1.1	530	110	119.38	c				
Chloromethane	94	45	3,100	1,500	390	190	13,000	6,200	390	190	39,000	19,000	50.49	n				
Dichlorodifluoromethane	100	20	3,500	700	440	88	15,000	3,000	440	88	44,000	8,800	120.91	n				
1,1-Dichloroethane (1,1-DCA)	18	4.4	590	140	77	19	2,600	630	77	19	7,700	1,900	98.96	c				
1,2-Dichloroethane (1,2-DCA)	1.1	0.27	36	8.7	4.7	1.1	160	39	4.7	1.1	470	110	98.96	c				
1,1-Dichloroethylene (1,1-DCE)	210	52	7,000	1,700	880	220	29,000	7,200	880	220	88,000	22,000	96.94	n				
Dichloroethylene, cis-1,2-	--	--	--	--	--	--	--	--	--	--	--	--	96.94	--				
Dichloroethylene, trans-1,2-	42	10	1,400	350	180	45	5,800	1,400	180	45	18,000	4,500	96.94	n				
Ethylbenzene	11	2.5	370	84	49	11	1,600	360	49	11	4,900	1,100	106.17	c				
Methyl Tert-Butyl Ether (MTBE)	110	30	3,600	980	470	130	16,000	4,400	470	130	47,000	13,000	88.15	c				
Methylene Chloride	630	180	21,000	5,900	2,600	740	88,000	25,000	2,600	740	260,000	74,000	84.93	n				
Naphthalene	0.83	0.16	28	5.3	3.6	0.68	120	23	3.6	0.68	360	68	128.18	c				
Tetrachloroethylene (PCE)	42	6.1	1,400	200	180	26	5,800	840	180	26	18,000	2,600	165.83	n				
Toluene	5,200	1,400	170,000	44,000	22,000	5,700	730,000	190,000	22,000	5,700	2,200,000	570,000	92.14	n				
1,1,1-Trichloroethane (1,1,1-TCA)	5,200	940	170,000	31,000	22,000	4,000	730,000	130,000	22,000	4,000	2,200,000	400,000	133.41	n				
Trichloroethylene (TCE)	2.1	0.38	70	13	8.8	1.6	290	53	8.8	1.6	880	160	131.39	n				
Trichlorofluoromethane	--	--	--	--	--	--	--	--	--	--	--	--	137.37	--				
1,2,4-Trimethylbenzene	63	13	2,100	420	260	52	8,800	1,800	260	52	26,000	5,200	120.20	n				
1,3,5-Trimethylbenzene	63	13	2,100	420	260	52	8,800	1,800	260	52	26,000	5,200	120.20	n				
Vinyl Chloride	1.7	0.65	56	22	28	11	930	360	28	11	2,800	1,100	62.50	c				
Xylene (mix)	100	23	3,500	790	440	100	15,000	3,400	440	100	44,000	10,000	106.17	n				
Xylene (m,o,p- separately)	100	23	3,500	790	440	100	15,000	3,400	440	100	44,000	10,000	106.17	n				

Notes

All values in µg/m³ obtained from U.S. EPA Vapor Intrusion Screening Level (VISL) calculator (three significant figures) & rounded to two significant figures. VISL linked to U.S. EPA RSL database of toxicity and chemical parameters.
 All values in ppbv calculated from VALs & VRSLs reported above in µg/m³.
 AF = Attenuation Factor VAL = Vapor Action Level VRSL = Vapor Risk Screening Level U.S. EPA RSL = Regional Screening Level -- = Inhalation toxicity values not available from U.S. EPA
 n = noncancer; c = carcinogenic

Immediate Action Criteria: carcinogens (c) = 10 x VAL or VRSL; non-carcinogens (n) = 3 x VAL or VRSL; TCE in indoor air at certain concentrations

Footnotes

1. Quick Look-Up Table only includes common contaminants. To determine the VAL and VRSL for other contaminants, refer to the steps on the next page.
2. Concentrations reported in ppbv and µg/m³ are not equivalent for air. If comparing datasets with both units, refer to the instructions on page 3 for how to convert between ppbv and µg/m³.
3. Note indoor air and sub-slab vapor concentrations are variable when making decisions on protecting public health from vapor intrusion under Wis. Admin. Code s. NR 708

Guidance Update – RR-0136 (rev. Sept. 2021)

STEP 1: Check if the contaminant is sufficiently volatile and toxic to pose a vapor risk:

- Open the current “U.S. EPA Vapor Intrusion Screening Levels (VISL) Calculator” home page at www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator.
- Select the “Calculator” from the Contents list.
- Set Hazard Quotient (for Non-Carcinogens) to 1 and Target Risk (for Carcinogens) to 10^{-5} .
- Select Exposure Scenario. **[Example: Resident]**
 - Select “Resident” for settings (i.e., land use) meeting the definition of “residential setting” in Wis. Admin. Code § NR 700.03(49g).
 - Select “Commercial” for settings meeting definition of “non-residential setting” (i.e., commercial or industrial) in Wis. Admin. Code § NR 700.03(39m).
- Select Screening Level Type “Default” which will provide an attenuation factor of 0.03. See step 2 to select a different attenuation factor.
- Select Individual Chemical(s). **[Example: Trichloroethylene (TCE)]**
- Click on “Retrieve (new window).”
- Scroll down to “(Resident or Commercial) VISL” **[Example: Resident VISL]** and scroll over to columns 5 and 6 to determine if the chemical is sufficiently volatile and toxic to pose an inhalation risk via vapor intrusion from soil or groundwater source. **[Example: Yes (Soil Source) and Yes (Groundwater Source) for TCE]**
 - If no, this means the chemical does not pose an inhalation risk, and the vapor intrusion assessment may be complete for that chemical.
 - If yes, move to Step 2.

STEP 2: Determine the indoor air Vapor Action Level (VAL)

- For the Exposure Scenario selected in Step 1 **[Example: Resident]**, scroll over to column 7 for “Target Indoor Air Concentration” (now reported on VISL to three significant figures). **[Example: 2.09E+00 for Resident Target Indoor Air Concentration for TCE]**
- Target Indoor Air Concentration rounded to two significant figures = **VAL** for selected Exposure Scenario. **[Example: 2.09E+00 rounded to 2.1 $\mu\text{g}/\text{m}^3$ for Residential VAL for TCE]**
- For additional Exposure Scenarios, return to the VISL Calculator page and select applicable Exposure Scenario as described in Step 1 above. **[Example Commercial]** Note “Commercial” = all non-residential settings.
- Click on “Retrieve (new window).”
- Scroll down to “(Resident or Commercial) VISL” **[Example Commercial VISL]** and over to column 7 for “Target Indoor Air Concentration” as described above for the VAL for selected Exposure Scenario. **[Example 8.76E+00 for Commercial Target Indoor Air Concentration for TCE rounded to 8.8 $\mu\text{g}/\text{m}^3$ for Commercial VAL for TCE]**

STEP 3: Calculate the Vapor Risk Screening Levels (VRSLs)

- Select the appropriate attenuation factor from the table on page 3:
 - Attenuation factor is based on media type and the location where the sample was collected.

Guidance Update – RR-0136 (rev. Sept. 2021)

*** Groundwater VRSLs:**

Do not use the VISL Calculator or the formula below for calculating the groundwater VRSL for PCE and TCE. If PCE or TCE are in groundwater, use the respective Wis. Admin. Code ch. NR 140 Enforcement Standards as the vapor screening criteria for plumes at the water table.

Do not use the VISL Calculator or the formula below for calculating the groundwater VRSL for any contaminant where the groundwater plume is in contact with a building foundation, including PCE and TCE. If groundwater is in contact with the building foundation, use the Wis. Admin. Code ch. NR 140 Preventive Action Limit as the vapor screening criteria.

MEDIA	ATTENUATION FACTOR	
	RESIDENTIAL OR SMALL COMMERCIAL BUILDING	INDUSTRIAL OR LARGE COMMERCIAL BUILDING
Crawl space	1	1
Sub-slab vapor	0.03	0.01
Deep soil gas	0.01	0.001
Groundwater*	0.001	0.0001
Sanitary sewer gas (from main)**	0.03	0.03

- Use the VISL Calculator for the default 0.001 attenuation factor for the appropriate exposure scenario and chemical.
- On the retrieval windows specific for each exposure scenario, scroll over to “Target Groundwater Concentration” and round to two significant figures. [Example 4.59E+01 for Residential Target Groundwater Concentration rounded to 460 µg/m³ for Residential groundwater VRSL for naphthalene]
- For additional Screening Levels (i.e., attenuation factor other than 0.001), choose option A or B:
 - A. Return to the VISL Calculator page. Note if utilizing the VISL Calculator page to calculate groundwater VRSLs with attenuation factors other than the default 0.001, always select “Output to PDF” and include the PDF in a submittal to the DNR as support for calculations.
 - Select Screening Level Type “Site Specific”
 - Select source for chemical physical properties and toxicity values “User-provided”
 - Click on “Retrieve (new window)”
 - Scroll down to “Groundwater and Soil Gas Equation and Parameters” and update the applicable AF. [Example 0.0001 for AF_{gw} for groundwater large commercial or industrial]
 - Click on “Retrieve,” scroll to appropriate column as described above for the groundwater VRSLs and round to two significant figures as described above.
 - B. Use the following formula to calculate the groundwater concentrations that could cause a VAL exceedance in indoor air for a compound.

$$C_{gw} = \frac{VAL}{H \times AF \times 1000 \text{ L/m}^3}$$

- Where:
- C_{gw} = Groundwater Concentration (µg/L)
 - VAL = Vapor Action Level (µg/m³)
 - AF = attenuation factor (dimensionless or unitless)
 - Use groundwater attenuation factor in most cases, or
 - Use the sub-slab attenuation factor if groundwater is near, or in contact with the building foundation.
 - H = Henry’s Law constant (dimensionless)
 - On the VISL spreadsheet, go to worksheet titled “Parameters Summary” and look up the Henry’s law constant for the chemical.
 - Or go to www3.epa.gov/ceampubl/learn2model/part-two/onsite/esthenry.html Input the temperature and chemical name to get Henry’ law constant.

****Sanitary Sewer Gas Screening Levels:**

- See RR-649, *Guidance for Documenting the Investigation of Human-made Preferential Pathways Including Utility Corridors*. Go to dnr.wi.gov, search “RR-649.”

Convert data from ppbV to µg/m³ (if needed):

- If a vapor dataset has multiple units (ppbV and µg/m³), convert the data to a common unit of measure prior to evaluating trends or comparing values in the data.
- To convert between µg/m³ and ppbV, go to www3.epa.gov/ceampubl/learn2model/part-two/onsite/ia_unit_conversion.html, or use following formula:

$$\mu\text{g/m}^3 = \frac{\text{ppbV} \times \text{MW}}{24.05}$$

Where: MW = molecular weight (g/mole)
24.05 = conversion factor based on temperature = 20°C and pressure = 1 atm

For additional assistance, contact a DNR vapor intrusion specialist listed on the “Vapor Intrusion Resources for Environmental Professionals” web page under the “Contacts” tab; visit dnr.wisconsin.gov/topic/Brownfields/Vapor.html.

Guidance Update – RR-0137 (rev. Sept. 2021)

Wisconsin DNR – Environmental Contamination



Remediation & Redevelopment Program

September 2021

Guidance: History of Changes⁽¹⁾ to Vapor Action Levels (VAL)⁽²⁾, Vapor Risk Screening Levels (VRSL) and Attenuation Factors (AF)⁽³⁾ for Common Volatile Organic Compounds (VOC) in Wisconsin

Notes:

1. This historical table supplements the *Wisconsin Vapor Quick Look-Up Table* (RR-0136) and is intended to be used in understanding previous site-specific decisions regarding vapor data. (Go to dnr.wi.gov, search "RR-0136.")
2. The VAL is either Residential or Non-residential (i.e., Small Commercial VAL = Large Commercial & Industrial VAL). "Residential setting" includes educational, child care and elder care settings per Wis. Admin. Code § NR 700.03(49g). "Non-residential setting" means other than residential per Wis. Admin. Code § NR 700.03(39m).
3. The AF is either Residential/Small Commercial or Large Commercial & Industrial (i.e., Residential AF = Small Commercial AF).

Tetrachloroethylene (PCE)													
Date	Residential				Small Commercial				Large Commercial & Industrial				Sub-slab AF for Res. & Sm. Comm. vs. Lg. Comm. & Ind.
	Indoor Air VAL		Sub-slab VRSL		Indoor Air VAL		Sub-slab VRSL		Indoor Air VAL		Sub-slab VRSL		
	µg/m ³	ppbV	µg/m ³	ppbV	µg/m ³	ppbV	µg/m ³	ppbV	µg/m ³	ppbV	µg/m ³	ppbV	
2010	4.1	0.6	--	--	21	3.1	--	--	21	3.1	--	--	AF not yet established
May 2010	4.1	0.6	41	6	21	3.0	210	30	21	3.0	2,100	300	AF = 0.1 / 0.01
May 2012	42	6.2	420	62	180	27	1,800	270	180	27	18,000	2,700	AF = 0.1 / 0.01
Jun 2015	42	6.2	1,400	210	180	27	6,000	900	180	27	18,000	2,700	AF = 0.03 / 0.01
May 2021	42	6.1	1,400	200	180	26	5,800	840	180	26	18,000	2,600	AF = 0.03 / 0.01

Trichloroethylene (TCE)													
Date	Residential				Small Commercial				Large Commercial & Industrial				Sub-slab AF for Res. & Sm. Comm. vs. Lg. Comm. & Ind.
	Indoor Air VAL		Sub-slab VRSL		Indoor Air VAL		Sub-slab VRSL		Indoor Air VAL		Sub-slab VRSL		
	µg/m ³	ppbV	µg/m ³	ppbV	µg/m ³	ppbV	µg/m ³	ppbV	µg/m ³	ppbV	µg/m ³	ppbV	
2010	12	2.2	--	--	61	11.4	--	--	61	11.4	--	--	AF not yet established
May 2010	12	2.2	120	22	61	11	610	110	61	11	6,100	1,100	AF = 0.1 / 0.01
Nov 2011	2.1	0.39	21	3.9	8.8	1.6	88	16	8.8	1.6	880	160	AF = 0.1 / 0.01
Jun 2015	2.1	0.39	70	13	8.8	1.6	290	53	8.8	1.6	880	160	AF = 0.03 / 0.01
May 2021	2.1	0.38	70	13	8.8	1.6	290	53	8.8	1.6	880	160	AF = 0.03 / 0.01

Key:

µg/m³ = micrograms per cubic meter
ppbV = parts per billion by volume

-- not established
changes noted in **BOLD**

Page 1 of 3

Publisher: dnr.wi.gov Search: vapor

This document is intended solely as guidance and does not contain any mandatory requirements except where requirements found in statute or administrative rule are referenced. Any regulatory decisions made by the Department of Natural Resources in any matter addressed by this guidance will be made by applying the governing statutes and administrative rules to the relevant facts.

Guidance Update – RR-0137 (rev. Sept. 2021)

Guidance: History of Changes⁽¹⁾ to Vapor Action Levels (VAL)⁽²⁾, Vapor Risk Screening Levels (VRSL) and Attenuation Factors (AF)⁽³⁾ for Common Volatile Organic Compounds (VOC) in Wisconsin

Dichloroethylene, cis-1,2- (cis-1,2-DCE)													
Date	Residential				Small Commercial				Large Commercial & Industrial				Sub-slab AF for Res. & Sm. Comm. vs. Lg. Comm. & Ind.
	Indoor Air VAL		Sub-slab VRSL		Indoor Air VAL		Sub-slab VRSL		Indoor Air VAL		Sub-slab VRSL		
	µg/m ³	ppbV	µg/m ³	ppbV	µg/m ³	ppbV	µg/m ³	ppbV	µg/m ³	ppbV	µg/m ³	ppbV	
2010	370	93	--	--	15,270	3,860	--	--	15,270	3,860	--	--	AF not yet established
May 2010	--	--	--	--	--	--	--	--	--	--	--	--	AF = 0.1 / 0.01
Jun 2015	--	--	--	--	--	--	--	--	--	--	--	--	AF = 0.03 / 0.01

Dichloroethylene, trans-1,2- (trans-1,2-DCE)													
Date	Residential				Small Commercial				Large Commercial & Industrial				Sub-slab AF for Res. & Sm. Comm. vs. Lg. Comm. & Ind.
	Indoor Air VAL		Sub-slab VRSL		Indoor Air VAL		Sub-slab VRSL		Indoor Air VAL		Sub-slab VRSL		
	µg/m ³	ppbV	µg/m ³	ppbV	µg/m ³	ppbV	µg/m ³	ppbV	µg/m ³	ppbV	µg/m ³	ppbV	
2010	63	15.9	--	--	260	65.7	--	--	260	65.7	--	--	AF not yet established
May 2010	63	15.9	630	159	260	65.6	2,600	656	260	65.6	26,000	6,560	AF = 0.1 / 0.01
May 2014	--	--	--	--	--	--	--	--	--	--	--	--	AF = 0.1 / 0.01
Jun 2015	--	--	--	--	--	--	--	--	--	--	--	--	AF = 0.03 / 0.01
Nov 2020	42	10	1,400	350	180	45	5,800	1,400	180	45	18,000	4,500	AF = 0.03 / 0.01

Vinyl Chloride (VC)													
Date	Residential				Small Commercial				Large Commercial & Industrial				Sub-slab AF for Res. & Sm. Comm. vs. Lg. Comm. & Ind.
	Indoor Air VAL		Sub-slab VRSL		Indoor Air VAL		Sub-slab VRSL		Indoor Air VAL		Sub-slab VRSL		
	µg/m ³	ppbV	µg/m ³	ppbV	µg/m ³	ppbV	µg/m ³	ppbV	µg/m ³	ppbV	µg/m ³	ppbV	
2010	1.6	0.6	--	--	28	11	--	--	28	11	--	--	AF not yet established
May 2010	1.6	0.62	16	6.2	28	11	280	110	28	11	2,800	1,100	AF = 0.1 / 0.01
May 2014	1.7	0.65	17	6.5	28	11	280	110	28	11	2,800	1,100	AF = 0.1 / 0.01
Jun 2015	1.7	0.65	57	22	28	11	930	370	28	11	2,800	1,100	AF = 0.03 / 0.01
May 2021	1.7	0.65	56	22	28	11	930	360	28	11	2,800	1,100	AF = 0.03 / 0.01

Key:

µg/m³ = micrograms per cubic meter

ppbV = parts per billion by volume

-- not established

changes noted in **BOLD**

Page 2 of 3

Guidance Update – RR-0137 (rev. Sept. 2021)

Guidance: History of Changes⁽¹⁾ to Vapor Action Levels (VAL)⁽²⁾, Vapor Risk Screening Levels (VRSL) and Attenuation Factors (AF)⁽³⁾ for Common Volatile Organic Compounds (VOC) in Wisconsin

Benzene													
Date	Residential				Small Commercial				Large Commercial/Industrial				Sub-slab AF for Res. & Sm. Comm. vs. Lg. Comm. & Ind.
	Indoor Air VAL		Sub-slab VRSL		Indoor Air VAL		Sub-slab VRSL		Indoor Air VAL		Sub-slab VRSL		
	µg/m ³	ppbV	µg/m ³	ppbV	µg/m ³	ppbV	µg/m ³	ppbV	µg/m ³	ppbV	µg/m ³	ppbV	
2010	3.1	1.0	--	--	16	5	--	--	16	5	--	--	AF not yet established
May 2010	3.1	0.95	31	9.5	16.0	4.9	160	49	16.0	4.9	1,600	490	AF = 0.1 / 0.01
May 2014	3.6	1.1	36	11	16.0	4.9	160	49	16.0	4.9	1,600	490	AF = 0.1 / 0.01
Jun 2015	3.6	1.1	120	37	16	4.9	530	160	16	4.9	1,600	490	AF = 0.03 / 0.01
Jun 2015	3.6	1.1	120	37	16	4.9	520	160	16	4.9	1,600	490	AF = 0.03 / 0.01

Naphthalene													
Date	Residential				Small Commercial				Large Commercial/Industrial				Sub-slab AF for Res. & Sm. Comm. vs. Lg. Comm. & Ind.
	Indoor Air VAL		Sub-slab VRSL		Indoor Air VAL		Sub-slab VRSL		Indoor Air VAL		Sub-slab VRSL		
	µg/m ³	ppbV	µg/m ³	ppbV	µg/m ³	ppbV	µg/m ³	ppbV	µg/m ³	ppbV	µg/m ³	ppbV	
May 2010	0.72	0.14	7.2	1.4	3.6	0.68	36	6.8	3.6	0.68	360	68	AF = 0.1 / 0.01
May 2014	0.83	0.16	8.3	1.6	3.6	0.68	36	6.8	3.6	0.68	360	68	AF = 0.1 / 0.01
Jun 2015	0.83	0.16	28	5.3	3.6	0.68	120	23	3.6	0.68	360	68	AF = 0.03 / 0.01

Key:

µg/m³ = micrograms per cubic meter
ppbV = parts per billion by volume

-- not established
changes noted in **BOLD**

Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin

Wis. Stat. ch. 292; Wis. Admin. Code ch. NR 700

Purpose

The purpose of this guidance is to provide approaches for complying with the requirements in Wis. Stat. ch. 292 and Wis. Admin. Code ch. NR 700 that relate to vapor intrusion. This guidance identifies the conditions where assessment of the vapor intrusion pathway is necessary at contaminated sites; sets out the criteria for evaluating health risk; identifies appropriate responses; explains long-term stewardship; and clarifies when sites with a complete or potential vapor migration pathway may achieve closure.

This guidance is applicable to contaminated sites where volatilization of subsurface contaminants has migrated or has the potential to migrate to current or future occupied buildings. Unless otherwise noted, all provisions in this guidance apply to the responsible party (RP) and/or property owner of a contaminated site.

Related DNR Guidance

- [RR-042: DNR Case Closure Continuing Obligations: Vapor Intrusion](#)
- [RR-986: Sub-slab Vapor Sampling Procedures](#)

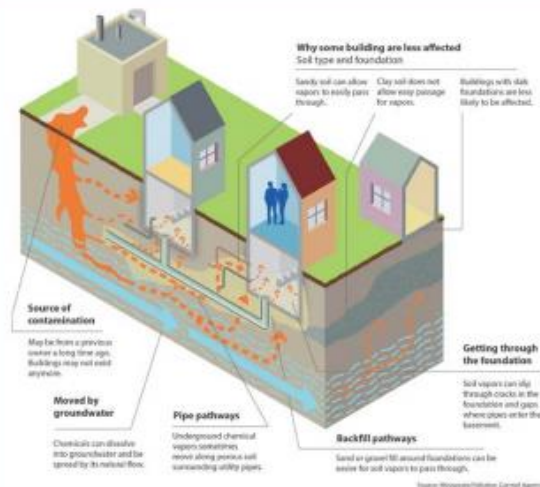
Related DNR Factsheets

- [RR-067: Vapor Intrusion Investigation - Information Sheet for Neighbors](#)
- [RR-892: What is Vapor Intrusion?](#)
- [RR-953: Why Test for Vapor Intrusion?](#)
- [RR-954: What to Expect During Vapor Intrusion Sampling](#)
- [RR-977: Understanding Chemical Vapor Intrusion Testing Results](#)
- [RR-934: Who Should I Contact About Vapor Intrusion Investigations?](#)
- [RR-973: Environmental Contamination & Your Real Estate](#)

Overview of Vapor Intrusion

Vapor intrusion generally refers to subsurface contamination that can volatilize and the vapors enter the breathing space of buildings. Vapor intrusion can also occur when contaminated groundwater infiltrates buildings and contaminants directly volatilize into the indoor air. Vapors can migrate through air space in permeable soils, fractures in bedrock or clay tills, utilities, sumps, or cracks in the building foundation.

How vapor intrusion happens: a complex path



RR-800 (rev. Jan. 2018)

- VI Screening
- Outreach & Communication
- Investigation for VI
- Evaluating VI Investigation Data
- Response Actions for VI
- Mitigation Design
- System Commissioning
- Operation, Monitoring and Maintenance (OM&M)
- Long-Term Stewardship
- Tables, Figures & Appendices

RR-800 (rev. Jan. 2018)

REVISION

in progress

- VI conceptual site models – dry cleaner vs. non-dry cleaner
- Screening criteria
- Advances in VI investigation & mitigation
- Site-specific attenuation factors
- Parking garages
- Elevators
- High water tables
- Preferential pathways
- VI protection for new construction prior to vs. after case closure
- OSHA PELs vs. VALs for indoor air
- Building sizes (sm. commercial vs. lg. commercial/industrial)
- Emphasize: analyze for contaminants of concern only
- ANSI/AARST Standards
- NRPP-certified mitigators
- And more!

RR-800 (rev. Jan. 2018)

**RESEARCH
&
DEVELOPMENT**

in progress

National Workgroups & Partnerships

- U.S. EPA Region 5 Vapor Intrusion Technical (R5 VI Tech) Group
- State Coalition for Remediation of Dry Cleaners (SCRD)
- Interstate Technology & Regulatory Council (ITRC) – Vapor Intrusion Mitigation
- American Assoc. of Radon Scientists & Technologists (AARST)
- Kansas State University (KSU) – Radon Courses

Conferences

- Assoc. for Environmental Health and Sciences (AEHS) Foundation (East & West Coast)
- Air and Waste Management Assoc. (AWMA)
- Great Lakes Environmental Remediation & Redevelopment (GLERR) Conference
- Battelle International Conf. on Remediation of Chlorinated & Recalcitrant Compounds
- And more!

Rule Reminders



- **Emergency immediate actions** must be taken for hazardous substance discharges that pose an imminent threat to public health, safety, welfare or the environment – Wis. Admin. Code § NR 708.05(2)
- **Interim actions** must be taken to minimize the threat to public health, safety, welfare or the environment – Wis. Admin. Code § NR 708.11(1)
- **Vapor mitigation systems** other than a radon-type sub-slab depressurization system require reports and plans in accordance with Wis. Admin. Code ch. NR 724 for review and approval prior to proceeding with design, implementation or operation - Wis. Admin. Code § NR 708.11(4)(b)

Note: Wis. Admin. Code ch. NR 712 applies (professional certifications) – See [RR-081](#)

Rule Reminders



After installation of vapor mitigation system, submit:

- Wis. Admin. Code § NR 708.15 **Interim Action Report** / § NR 724.15 **Construction Documentation** (60 days)
 - Interim Action Reports / Construction Documentation written for DNR/Consultant/Mitigator (technical audience)
- AND
- Wis. Admin. Code §§ NR 708.15(3)(k) and NR 724.13(2) **Operation, Maintenance & Monitoring (OM&M) Plan**
 - OM&M Plans generally written for non-technical audience (see [RR-981](#) for template)
 - [Form 4400-321](#) Vapor Mitigation System (VMS) Inspection Log (available Oct 2020) per Wis. Admin. Code § NR 727.05(1)(b)3

Rule Reminders



- **Remedial action** (RA) required to reduce the mass and concentration of volatile compounds to extent practicable when vapor risk screening level(s) exceeded – Wis. Admin. Code § NR 726.05(8)(b)1

Note: VMS ≠ RA

Q. How do you reduce mass and concentration to the extent practicable?

A. See Wis. Admin. Code ch. NR 722 to evaluate remedial options and select a remedy/remedies both technically and economically feasible.

DNR / DHS / Local Health Partnership

DNR Project Manager (& Regional Supervisor as needed)

All communications include DNR PM

DNR Regional VI Expert Support

Regional DNR VI Reps

- Josie Schultz, NER
- John Hunt, NOR
- Jeff Ackerman, SCR
- Greg Michael, SER
- Joe Martinez, SER
- Candace Sykora, WCR

State Level DNR VI Support

DNR VI Team

- Jennifer Borski
- Jim Walden

State Level Health Support

DHS VI Team

- Curtis Hedman
- Nathan Kloczko
- Brita Kilburg-Basnyat
- Amanda Koch

Local Health Support

Local Health Officer or Sanitarian

Vapor Intrusion Prevention Toolkit - DHS

<https://www.dhs.wisconsin.gov/air/vi.htm>



Through the cracks

Preventing vapor intrusion exposure in Wisconsin
and keeping children and families safe

Wisconsin Site Evaluation Program

Bureau of Environmental and Occupational Health | Department of Health Services
Visit us at dhs.wisconsin.gov/eh | Contact us at DHSEvHealth@dhs.wisconsin.gov



P-03070
(08/2021)

Vapor Intrusion Prevention Toolkit - Three Step Process

1 Create an Inventory

2 Screen and Prioritize

3 Implement Prevention Measures

Vapor Intrusion Prevention Toolkit - DNR



CONNECT WITH US

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"WILD WISCONSIN:
OFF THE RECORD"