Paper/Agenda #

Issue Paper: Conceptual Site Models and Site Investigations (5/2/2025 DRAFT)

NR 700 EAG Subgroup
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TYPE OF RECOMMENDATION

This issue paper includes recommendations for revising DNR administrative rules, creating or revising DNR guidance materials, and instituting changes to internal DNR processes.

BACKGROUND

The language in Wis. Admin. Code ch. NR 716 language can be unclear or confusing. The goal of this issue paper is to explore specific issues that arise under ch. NR 716 and identify solutions for improving clarity and regulatory efficiency. This issue paper was developed by DNR staff and volunteer members of the NR 700 EAG Subgroup and External Advisory Group.

This issue paper identifies seven (7) topics for future action:

A. Conceptual Site Model
B. Site Investigation Scoping and Work Plan Preparation
C. DNR Technical Review Requests
D. Groundwater
E. Lab Data Interpretation
F. Visual Aids
G. Iterative Site Investigation (SI) & Comprehensive Site Investigation Report (SIR)

This issue paper summarizes results and recommendations; **Attachment A** provides full background and detailed proposals on each topic.

PROPOSAL

In summary, this issue paper identifies topics for administrative rule development, guidance template development, or for DNR internal process adjustments. **Attachment A** provides full background and detailed proposals on each topic.

RESOURCES NEEDED

Items identified within this issue paper for administrative rulemaking are, as a single rulemaking effort, estimated to take approximately 2,000 staff hours. The rulemaking also involves the support of an appointed rule advisory committee during rule development, public support and involvement during the rule development, economic impact, and public hearing processes.

Guidance development involves staff time and public input. The amount of staff time for these activities varies widely based on the type of guidance (template, form, guidance) and whether it is new or revised.

Changes to internal DNR processes involve staff time and vary depending on the nature/impact of the change. In some cases, changes to internal DNR processes may involve the need for additional staff.

ENVIRONMENTAL JUSTICE EVALUATION

Changes proposed in this paper are intended to improve regulatory efficiency, which would benefit regulated parties through time/cost savings and improves the DNR's ability to carry out its statutory duties under Wis. Stat. ch. 292.11. Disadvantaged and underserved communities are more likely to live near contaminated sites and share a disproportionate burden of environmental pollution. Improvements are anticipated to benefit

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disadvantaged and underserved communities, as well as Wisconsin residents in general, through better protection of human health and the environment by:

- Reducing responses to insufficient documentation (reports);
- Identifying potential exposures to receptors earlier in the cleanup process;
- Creating documents or diagrams that may be used to communicate environmental issues at a site;
- Allowing more efficient responses to potential exposures to contamination; and
- Reducing the time spent on investigation (getting to cleanup faster).

Parts of this proposal contemplate that administrative rule revisions would result in increased fees for DNR technical assistance, which may have a disparate impact on smaller businesses and disadvantaged parties that are cleaning up a contaminated site under Wis. Admin. Code chs. NR 700-799. During issue paper drafting, the participants raised the following concerns:

- The impact of requiring DNR approvals for additional reports, along with DNR review fees, on smaller entities and disadvantaged parties (under *B. Site Investigation (SI) Scoping*).
- Equity concerns with the identified approach of instituting a graduated scale for expediting reviews, such that regulated parties may pay a higher DNR technical assistance fee for faster review (under *C. DNR technical review requests*).

Increased or graduated-scale DNR service fees could have a disparate impact on businesses and organizations that cannot compete with larger, better-resourced businesses and organizations. Residents of disadvantaged and underserved communities are unlikely to be impacted directly by increased DNR technical assistance fees; however, as stated above, these communities would benefit broadly from better protection of human health and the environment.

COMMENTS

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ATTACHMENT A: BACKGROUND

A. Conceptual Site Model (CSM)

Issue background (CSM):

Administrative code does not explicitly name a CSM as a requirement, although many components of a CSM necessary to complete a site investigation are included in ch. NR 716. A CSM is an ongoing/living model or diagram that starts during site investigation scoping and builds with each iteration of the investigation and when remedial actions are taken. However, administrative code does not define CSMs and does not clarify when CSM development should begin or how to present a CSM as part of the site investigation (SI) process, the remedial action options report (RAOR), the remedial action plan (RAP), or case closure request.

Wis. Admin. Code § NR 716.15(3)(a) requires the SI report to include the scoping information identified in § NR 716.07. Typically, RPs do not submit a Site Investigation Work Plan (SIWP) to the DNR, nor is a presentation of the § NR 716.07 scoping information included in the SI report; therefore, it is difficult for the DNR to understand what is being investigated, how the history of the site is related to the reported contamination, potential receptors, etc.

The CSM is critical to developing a complete SI report. A CSM in a flexible format is needed with updates throughout the investigation, remedy, and closure. Further, examples for simple vs. complex sites and well-defined parameters are needed. The results and data interpretation sections of the SI report should rely heavily on and reference the CSM.

With exception to scenarios when immediate or interim action is appropriate, the RP should demonstrate that the SI is complete before conducting remediation/response action and before case closure is requested. It is common that the SI is not complete prior to initiating remedial action. Many SI reports are submitted with or just prior to case closure and without enough information to demonstrate that the SI is complete. Also, frequently the case closure request is the first submittal received with a request for DNR technical assistance review (with fee) and response. Most cases are not closed following the initial case closure request, because additional SI work is needed.

Proposal (CSM):

Administrative code changes and guidance development are recommended.

- Code changes could implement the Interstate Technology and Regulatory Council (ITRC) definition of a CSM, which is "a three-dimensional visualization of site conditions that allows for evaluation of contaminant sources and affected media, migration pathways and potential receptors". [1] This definition, which specifically calls for a three-dimensional visualization, may require clarification so that regulated parties have the flexibility to present a CSM that is appropriate for the complexity of the site. Proposed language would clarify that a plan view and a section view is required; however, a complex 3-D visual computer model is not required.
- Code changes could require a CSM to be developed and maintained as a communication and decision-making tool throughout the Wis. Admin. Code chs. NR 700-799 process. Code changes could outline the following potential CSM steps:
    - Begin developing a CSM when a hazardous substance discharge is reported.

[1] ITRC (2020 Dec.) *Glossary.* Technical Resources for Vapor Mitigation Training. https://vim-1.itrcweb.org/glossary/.

- Evolve the CSM as scoping information is gathered.
- Include the initial CSM in the submittal of an SIWP and include updated CSMs with subsequent submittals throughout process, including closure.
- As site investigation data are collected, update the CSM.
- Include the CSM in the SIR and show the nature, degree, and extent of contamination in all affected media, migration pathways, and receptors of contamination.
- The CSM directly supports the RAOR/RAP in evaluating remedial options.
- Include the CSM in the closure application to demonstrate that the site investigation is complete, how the response/remedial actions addressed the contamination, and that engineering controls address residual contamination in a manner that is protective of human health and the environment.

- Guidance could supplement code revisions to assist regulated parties. CSM examples as part of a guidance document could be created for simple and complex sites. Templates may be needed.

B. <u>Site Investigation (SI) Scoping and Work Plan Preparation</u>

Issue background (SI Scoping):

The Site Investigation Work Plan (SIWP) requires scoping information (NR 716.09). Responsible parties do not submit SIWPs to the DNR for most cases, although they are required for the initial investigation and desired for iterations of investigation when the initial investigation indicates more work is needed. Regulated parties risk a delay in the cleanup process if they do not submit a SIWP. Regardless of SIWP submission, the DNR may request additional work. If no SIWP is submitted, it is difficult for the DNR to understand how and why an investigation was scoped and other DNR document reviews and responses can take longer as DNR staff work to understand site conditions and work plan decisions. Work plans should be required for each iteration of site investigation. The SI can expand in detail and complexity over time. It is difficult and time-consuming to determine compliance based on multiple SIWP reviews that don't include previous scoping information or provide the evolving understanding of the site conditions.

The Site Investigation Report (SIR) requires scoping information (NR 716.15, NR 716.07). SIWP and SIRs are difficult for the DNR to review without adequate background information and presentation of general site conditions.

The pace of the investigation should be considered when developing a SIWP. For investigations where the responsible party needs to move forward quickly, but multiple field iterations are anticipated, consider stepped or dynamic work plan approaches that outline how an RP will move forward with additional investigation based on the initial fieldwork (e.g., stepping out monitoring wells based on specific pre-defined criteria).

Phase I ESA /AAI or desktop ESA-like documents could provide background information. Other states like Minnesota and Indiana require a Phase I ESA as part of entry into some programs.

Proposal (SI Scoping):

Administrative code revisions are recommended:

- Require submission of SIWPs and scoping information, including CSM info. Leave flexibility in code to add certain scoping information only when relevant to the site.
- Require SIWPs to be submitted for DNR technical assistance/review (with fees) when additional SI field work is proposed.
- Require subsequent SIWPs to be submitted with a DNR technical assistance fee (per plan) when additional investigation steps are proposed.
- Enable the DNR to direct the content of SIWPs (e.g., SIWP checklist) which may include quality assurance

information or sampling and analysis strategies.

- Enable DNR to require iterative SIWPs to contain all previous background data and evolving understanding of site conditions based on field investigation results and/or clarify whether additional SIWPs require all previous background data that was submitted as part of previous SIWP.

Further research and potential inclusion as administrative rule changes is recommended for the following:

- For required scoping information, consider requiring information the history of site, the receptors, and its status as a wetland, archeological site or other special consideration plus site specific climatologic information).
- Research requirements regarding "sensitive receptors" in other states and consider these approaches for inclusion in administrative rule changes.
- Consider inclusion of a requirement to submit Sampling and Analysis Plans (SAPs).
- Consider inclusion of a requirement to submit Standard Operating Procedures (SOPs).
- Consider including the ability for DNR to request Quality Assurance Project Plans (QAPPs) at specific sites in addition to the quality assurance and control information currently required under NR 716.13.
- Consider establishing a combined DNR technical assistance fee for SI/RAORs and RAOR/RAPs.

C. DNR technical review requests

Issue background (DNR technical review requests):

The DNR receives very few technical assistance requests (with fees) for SIWPs, SIRs, or RAORs. The lack of DNR technical oversight for these submittals may compound issues and delays and reduce efficiency in cleanup.

When an RP requests the DNR's technical assistance (with fee) for a SIWP, the RP may need to wait 60 days before beginning fieldwork. However, if no technical assistance (with fee) is requested, the timeframe is shortened to half that time, 30 days. This regulatory process results in a disincentive for RPs to seek technical assistance from the DNR.

Requiring technical assistance (with fee) for all SIWP submittals is likely to result in feedback to the RP that ensures compliance with administrative code early on and keeps the project on track. However, under the current requirements the RP may experience delays in field work because the regulatory scheme outlines that field work may not begin for up to 60 days after submittal.

Requiring a graduated fee for expediting technical assistance reviews (i.e., paying a higher fee provides faster turnaround time from the DNR) may partially address the efficiency issue. However, a graduated fee may not be the best method to prioritized technical assistance and may result in prioritizing RPs that can afford a higher fee, which is unequitable to disadvantaged parties. For example, an individual property owner may not have means to pay a fee, much less a larger fee, to expedite technical assistance for their case, whereas a large real estate developer may be able to do so.

Consideration for expedited technical assistance based on human health risk may be more appropriate. For example, a faster turnaround for a site with TCE contamination and human receptors, for example, is more equitable and is likely to result in better health outcomes.

Proposal (DNR technical review requests):

Administrative rule revisions are recommended for consideration:

- Provide a consistent timeframe (60 days) for submissions that request DNR technical assistance (with fee) and those that do not request DNR technical assistance (with fee)

- Incentivize submittal of a technical assistance request (with fee) by reversing the current waiting period to begin field work (e.g., set review time to 90/180 days without a DNR technical assistance request and 30/60 days with a DNR technical assistance request).
- Reconsider review timeframes based on feasibility and impacts, i.e., staff capacity and construction project timeframes as many projects are not able to wait 90/180 days for DNR response.
- Require DNR technical assistance with fees for SIWPs, SIRs, RAORs, and RAPs.
- Allow a graduated scale for expediting DNR turnaround time (i.e., pay higher fee provides faster DNR review, or higher risk sites receive priority DNR turnaround time). Consider either the inclusion of certain environmental justice and/or high-risk prioritization criteria should be used to give sites priority, or an exemption should allow such sites to receive priority without an increased fee.
- Establishing (or maintaining) the payment of fees on a payment-per-report basis.
- Consider available strategies for addressing documents that are submitted to the DNR without a fee (for example, declining to review these documents, or requiring all document fees be paid prior to closure.

D. Groundwater

Issue background (Groundwater):

MNA: Section NR 716.13(13) requires MNA parameters to be collected during the SI with analysis and interpretation of geochemical indicators and parameters. Often when Monitored Natural Attenuation (MNA) is a potential a remedy or partial remedy, the consultant's justification of MNA as a remedy is limited to decreasing contaminant concentrations and does not include interpretation of geotechnical indicators and parameters. This issue occurs frequently enough to merit addressing. If MNA will likely be a component of the remedial action (which is true in many cases), the SIWP should include collection of MNA parameters. The SI report should summarize the MNA parameters and the sub-surface conditions that are present to support contaminant degradation. Field parameters at a minimum should be included, along with hydraulic conductivity information.

Temp wells: It is unclear that the correct use of temporary wells (i.e., wells that do not comply with NR 141 construction requirements) and grab samples is for field screening purposes. These results are generally not considered to be representative of groundwater conditions and are not sufficient for regulatory compliance (i.e., the results may not be used to demonstrate that concentrations of contaminants in groundwater are below an enforcement standard). Administrative code requires DNR approval for a temp well variance (for wells not complying with ch. NR 141) prior to use in a site investigation.

Also note that industry terms and DNR definition of temporary wells differ.

There is opportunity to define temp wells and clarify time frames in ch. NR 141. Also, this issue affects the SIWP, which should include methods or standard operating procedures prior to significant implementation of work. Whether permanent or temporary, the focus for wells in this context should be on collection of groundwater samples that are free of sediment and representative of the water unit.

Proposal (Groundwater):

Administrative rule revisions are recommended for consideration:

- Clarify when field monitoring of DO, ORP, pH, temp, alkalinity is required under state administrative code and clarify that it must be submitted as part of SI report.
- Require that certain MNA parameters be included in the SIWP based on contaminants identified during discharge notice. Require field parameters along with hydraulic conductivity information.
- Add clarity regarding temporary groundwater monitoring wells and grab samples; clarify terminology to be consistent with industry terms.

- Further clarify types of temporary wells used by industry and when pre-approval is required for use of monitoring points that are not compliant with ch. NR 141.

Guidance may also be considered in addition or as an alternative for the following items:

- Temp well guidance could be reestablished (possibly following respective changes in ch. NR 141).
- Further clarify types of temporary wells used by industry and when pre-approval is required for use of monitoring points that are not appropriate for comparison with groundwater quality standards (non-compliant with ch. NR 141).

DNR internal procedure recommendations may be considered:

- MNA shortcomings could be addressed during DNR response to SIWP (in addition to other approaches). Based on contaminant identified during discharge notice, certain MNA parameters could be identified.

E. Lab Data Interpretation

Issue background (lab data interpretation):

Data interpretation: Most site investigation reports (SIRs) do not include the interpretation of data required under § NR 716.15(3)(h). Often, the results are presented, but there is no discussion of how the nature, degree and extent has been defined in all environmental media and impacts to receptors, or how field conditions, laboratory results, data gaps and other limiting conditions affect the data interpretation.

J-flagged lab data: If lab results are estimated or "J-flagged," those lab results require interpretation; however, there is typically no discussion of how the RP/consultant considered the J-flagged data to be representative of site conditions. At times when they are discussed, the consultant dismisses the results due to the J-flag (i.e., misinterprets that they are non-detect due to the flag or that the flag renders the results as low concentrations, without consideration to either the laboratory's detection and reporting limits or the regulatory standards).

Method Detection Limits: Increased method detection limits (e.g., due to dilution or interference) that result in "no detect" (or J-flags) of a contaminant of concern when the method detection limit is at or above the residual contaminant level (RCL) or enforcement standard.

Exceptions noted by the lab during analysis of environmental samples: The SIR should discuss any samples noted by the lab as not being received in an appropriate condition (e.g., sediment in water, air in VOC vial, outside temperature limits). Many times when the lab identifies that the environmental samples have been received in a condition that may affect the results, it is not discussed in the SIR. For example, if the samples were not received on ice or there is air in a sample vial, the data results may be affected. Many other states require a QAQC discussion and evaluation in reports.

Proposal (lab data interpretation):

Data interpretation: Further discussion of the issue, causes, and potential resolutions for lack of interpretation of data required under NR 716.15 (3)(h) is needed. Some approaches that have been identified for consideration are:

- Consider whether administrative review for completeness applies (DNR internal process change)
- Define status report in ch. NR 700 and expectations (rule change)
- Use the SI outline and dictate results interpretation
- If no interpretation is made, DNR may state that the site will be considered "out of compliance" and a template response letter is generated stating a standard time frame to come back into compliance and assess a fee on parcel based on this.

J-flagged lab data: Further discussions of issues ("J-flagged" interpretation and discussion of how data is representative of site conditions), causes, and potential resolutions is needed.

- What would data interpretation include? Compare laboratory detection and reporting limits to regulatory standards (RCLs, ESs).

Some approaches identified are:

- Consider administrative rule changes requiring a data interpretation section in SI Report.
- Consider administrative rule changes defining a "j-flag" to not qualify as such (i.e., be the same as non-j-flag) until evidence is given in the contrary (e.g., not detected anywhere else, no source, and not in groundwater and soil, both lab detection and reporting limits are below cleanup standards).
- This would all be part of a SAP and QAPP. Define a QAQC process.

Method Detection Limits: Further discuss this issue, causes, and potential resolution.

- Direct the RR program to work with DNR's lab certification program to define how the lab manages this information in its Quality Assurance and Quality Control (QAQC) program.
- Incorporate this information into a QAQC document submitted with initial site report.
- Include in report of elevated detection limits
- Clarify whether this will this be interpreted as above the RCL standard (see NR 720.07(2))
- Consider requiring data validation section in SI Report

Exceptions noted by the lab during analysis of environmental samples: Administrative rule revisions are recommended:

- Require QA/QC report discussion and data validation section in SIR

F. Visual Aids

Issue background (Visual Aids):

Variability in Flow Direction. Variations in flow direction must be illustrated on water table and potentiometric surface maps under NR 716.15(4)(b)1, however, typically, only one flow direction map is provided with no discussion of variability in flow direction, which can affect receptors and remedial options. Lack of data is often related to lack of MNA information.

Isoconcentration Maps. Maps should include data to support illustration/depiction of the extent of contamination displayed as isoconcentration lines. See NR 716.15(4)(c). Maps should include both isoconcentration lines and data.

Cross Sections. Include data to support illustration/depiction of extent of contamination displayed as isoconcentration lines. See NR 716.15(4)(d). Cross sections should pass through the source area(s) and along potential/known migration pathways to potential receptors.

Photographs. Photographs are required, but rarely submitted, to document site work (§ NR 716.15(4)(f)). Occasionally, DNR staff have learned through site visits that site work was reported inaccurately. Photos may assist in documenting completed work.

Proposal (Visual Aids):

Further discussion of issues, causes, and potential resolution(s) is needed. Some approaches identified are:
Administrative rule changes:

- Clarify exactly what DNR wants for visual aids and update "visual aids" and other terms to be consistent with current federal and state usage.
- Clarify when photographs are appropriate and what types of photos DNR is requesting.
- Require a figure and table numbering scheme similar to that for closure submittals. As the SI expands, updates to these figures would be required.
- Grant monies for implementing and maintaining a database for laboratory data, similar to the GEMS monitoring well network, for which the date of event and lab data are uploaded based on Facility ID and associated with a single monitoring well to allow swift downloading and platting.
- DNR may be able to provide a consistent list of visual aids and items to include, but site variability and complexity need to be considered if additional/other information is needed.
- Put the data on the map.

- For contaminated media affected by seasonality, data is required in each season.

DNR internal process changes:

- Consider whether administrative review for completeness applies.
- In combination with an administrative rule requirement (listed above) for a figure and table numbering format, consider whether grant monies or other financial resources may be available for implementing and maintaining a GEM-style data portal where data is uploaded based on Facility ID.

G. Iterative Nature of SI & Comprehensive SIR

Issue background (Iterative Nature of SI & Comprehensive SIR):

Often, multiple SI reports are submitted to the DNR. The DNR recognizes that the SI is an iterative process; however, if multiple SIRs and technical reports with SI data have been submitted, a comprehensive report is needed to integrate and interpret all the data that has been collected to respond to the hazardous substance discharge. Frequently, DNR staff must review multiple reports to determine if the degree and extent of contamination has been defined in all environmental media. A requirement to provide summary figure(s) and table(s) that include all the site data from multiple rounds of sampling for any SI submittal would be more efficient and allow for a much less time-consuming review process.

Proposal (Iterative Nature of SI & Comprehensive SIR):

Further discussion of issues, causes, and potential resolutions is needed. Some approaches identified include the following administrative rule revisions:

- Revise administrative code to clarify the requirement for submission of a comprehensive SI that consists of all relevant data and visual aids, considering the time gap between sampling events, as applicable.
- Consider code revisions that would allow for hourly assessed DNR technical assistance fees at a "cost not to exceed" for any submittal. Base on established submittal templates.

Consider clarification in guidance of the following:

- Issues surrounding contamination crossing property lines, including entry permissions and liability issues.

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Proposal: ESTABLISHMENT OF A VAPOR CONTAINATION, MITIGATION, and STEWARDSHIP CLEANUP-FUND

Funding Sustainability EAG Subgroup
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WDNR Contributors: Michael Prager, Jennifer Borski, Judy Fassbender, ….
Subgroup Chairperson: Mark A Rutkowski, P.G.

ISSUE STATEMENTS

According to the State of Wisconsin Department of Health Services (DHS), the vapor intrusion (VI) pathway poses a significant risk to human health. Acute risks from contaminants of concern (specifically perchloroethene [PCE] and trichloroethene [TCE]) necessitate immediate corrective action consistent with the *EPA Regional Removal Management Users Guide.* An immediate corrective action is a short-term clean up intended to stabilize or clean up a site that poses an imminent and substantial threat to human life and the environment[1].

Currently, there are no mechanisms in place to provide financial assistance for the identification, investigation, mitigation, long-term monitoring and stewardship of properties affected by harmful chemical vapors associated with abandoned drycleaners, manufacturing facilities, automobile maintenance/repair, or any other facility or operation that used and released volatile organic compounds (specifically PCE and TCE) to the environment.

The current Dry Cleaner Environmental Response Fund (DERF) is insolvent and is not able to keep up with the existing reimbursement request submittals. Recent legislative proposals (Revitalize Wisconsin) intended to replace DERF and provide financial assistance in the form of grants or direct services to local governments, dry cleaners, and private parties, and others were previously killed in committee but revived in the most recent budget submittal.

PROPOSAL

This proposal is for the establishment of a vapor contamination, mitigation and stewardship cleanup fund (Fund) to address the risks to human health associated with the vapor intrusion pathway. This proposal includes a discussion on:

- A site scoring matrix model for determining eligibility criteria for selecting sites to receive funding;
- Defining what is considered a “residential property”;
- Specifying sensitive populations exposed to intrusive vapors; and
- Identifying unresolved issues and recommendations associated with previous funding mechanisms.

Secondary objectives of this proposal are to provide the WDNR with the statutory authority to write rules to implement the fund and pursue legislative changes to statutes needed to support the Fund.

[1] EPA Regional Removal Management Levels (RMLs) Users Guide; November 2024.

This proposal and recommendations were developed by the Remediation and Redevelopment External Advisory Group and members of the public, and do not necessarily represent the opinions or the position of the Wisconsin Department of Natural Resources or other state agencies.

BACKGROUND

According to the Wisconsin Department of Health Services (DHS), the vapor intrusion (VI) pathway poses a significant risk to human health. Numerous studies have indicated that the air in buildings overlying soil or groundwater contaminated with toxic vapor-forming substances may contain potentially harmful concentrations of these contaminants due to vapor intrusion.[2]

Vapor Intrusion Health Risks

Vapor Intrusion refers to subsurface contamination that can volatilize and the vapors enter the breathing space of buildings. Vapor intrusion may 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 till, utilities, sumps, or cracks in the building foundation.

Chlorinated solvents like PCE and TCE do not degrade in the vadose zone[3] when volatilized and can migrate long distances from the source of contamination via groundwater in a dissolved phase or via preferential pathways in the vapor phase. Additionally, PCE and TCE are known to have potential health effects at low concentrations that cannot be detected by their odor.

There is a significant risk to human health associated with inhaling volatile organic vapors, specifically from chlorinated solvents PCE and TCE migrating from contaminated soil and groundwater into buildings. Vulnerable groups for PCE and TCE exposure include children, the elderly and especially persons who can be or are pregnant and unborn children. With exposure to PCE or TCE the following pregnancy and fetal development health effects have been found: chonal atresia[1,2], eye defects[1,2], low birth weight[3,4], fetal death[1,3,5], major malformations[6,7], miscarriage[8,9], neural tube defects[1,2,3], oral cleft defects[1,2,3], and small for gestational age[1]. Additionally, breast[10], cervical[11], and ovarian[11] cancer were found in women exposed to PCE or TCE. Lastly, esophageal cancer[12,13,14], lung cancer[15], Hodgkins disease[11], prostate cancer[11], rectal cancer[14], impaired immune systems function[16], neurological effects[9], neurobehavioral performance deficits[16,17], and severe generalized hypersensitivity disorder[18] were all associated with elevated PCE or TCE exposure.

The nature and extent of the health risks associated with acute and long-term exposure to volatile organic vapors (especially PCE and TCE) have also been presented to the WDNR in a series of interdepartmental letters from DHS. These letters are attached as reference confirming the risks associated with acute and chronic exposure to chlorinated solvent vapors in air, particularly TCE.

Current State (Information Provided by the DNR)

Responsible parties (RPs) are required by Wis. Stat § 292.11 and the Wis. Admin. Rule Series NR 700-799 to address vapor intrusion on the source property, in rights-of-way (ROWs) and any affected off-site properties. As a result,

[2] *EPA's Vapor Intrusion Database: Evaluation and Characterization of Attenuation Factors for Chlorinated Volatile Organic Compounds and Residential Buildings.* EPA Publication EPA 530-R-10-002 (March 2012).
[3] The vadose zone, also known as the unsaturated zone, is the area between the upper land surface and the top of the water table. *Groundwater*; Freeze & Cherry 1979.

This proposal and recommendations were developed by the Remediation and Redevelopment External Advisory Group and members of the public, and do not necessarily represent the opinions or the position of the Wisconsin Department of Natural Resources or other state agencies.

many sites are investigated, remediated and mitigated for VI effectively by the RP. Also, some brownfield properties that are cleaned up and redeveloped by local governments and the private sector include VI concerns that are addressed as part of the site cleanup and redevelopment. However, many sites with significant health concerns are not of interest for redevelopment and there are a large number of sites that do not have a financially viable RP to address VI.

The DNR has federal funds from its EPA Brownfields Assessment Grant to conduct a limited amount of vapor investigation work at sites without a viable RP. This funding is only available for a limited time and not sufficient to address all locations with health concerns. These brownfields grant funds are restricted to address historical dry cleaner sites, with the initial effort looking at only three out of hundreds of historical dry cleaner locations in the city.

The DNR also has a limited amount of environmental repair fund dollars that are used statewide for vapor assessment and mitigation at open investigation or remediation sites with significant health concerns and no viable RPs. The environmental repair funds are used only in ROWs to sample soil gas and sanitary sewers in an effort to evaluate the extent of the vapor issues and at residential properties potentially impacted by VI. In FY 2023, five sites were investigated and in FY 2024, four sites are being investigated and in 2025 two sites are being investigated. DNR is aware of more than 100 open sites with known or potential VI impacting residential properties that are not being adequately addressed.

Long Term Stewardship

One concern regarding VI sites is identifying someone who can maintain and monitor a vapor mitigation system long term if one is needed. This is an issue for sites with viable RPs and those without. Currently, there are no funding mechanisms available for long term operation, monitoring and maintenance (OM&M) of vapor mitigation systems for sites without a viable RP. In addition, sites with a viable RP typically do not pay for long-term OM&M beyond case closure. The need to ensure protection of public health after an interim action to install the vapor mitigation system or beyond closure is very important. The current system of assigning continuing obligations that the property owner must follow is generally not effective with regards to successfully maintaining vapor mitigation systems.

VAPOR CONTAMINATION, MITIGATION, and STEWARDSHIP CLEANUP FUND SCOPE OF WORK

Objectives

We propose the Fund to be a stand-alone program that provides financial relief for the investigation, mitigation, and long-term OM&M of systems designed to reduce the concentrations of vapors as result of historical and existing releases of volatile organic vapors (especially PCE and TCE) to the environment as well as to reduce the mass and source of contamination. As proposed, the Fund will provide financial assistance for:

- Source identification (soil, groundwater, and vapor investigations);
- Protection of building occupants (design, installation, and commissioning of vapor mitigation systems);
- Vapor mitigation OM&M costs (pre- and post-case closure);
- Long-term stewardship of vapor mitigation systems; and
- Source cleanup/reduction to reduce or eliminate need for vapor mitigation.

This proposal and recommendations were developed by the Remediation and Redevelopment External Advisory Group and members of the public, and do not necessarily represent the opinions or the position of the Wisconsin Department of Natural Resources or other state agencies.

As proposed, the fund will be administered by the WDNR. The WDNR has experience managing funding programs including the Petroleum Environmental Cleanup Fund Act [PECFA], the Drycleaner Environmental Response Fund (DERF), Wisconsin Assessment Monies (WAM) and Ready for Reuse. DNR could establish similar forms, procedures and staff to administer this new fund.

Site Eligibility

The Funding Sustainability EAG Subgroup (FS Subgroup) proposes criteria for site selection based on a Site Selection Scoring-Matrix that provides a tool for relative comparative analysis of sites that apply for funding under this program.

Current administrative rules, state statutes, and federal regulations past promulgated have resulted in multiple definitions of residence, innocent landowner, environmental justice, and underserved/disadvantaged communities. The Site-Selection – Scoring Matrix simplifies the site eligibility determination by utilizing human health risk-based criteria as the basis for Fund award prioritization.

For the sake of Fund eligibility, an innocent landowner is defined as a bona fide purchaser of an inactive hazardous substance or waste disposal site without knowledge or without reasonable basis for knowing that hazardous substance or waste disposal had occurred or a person whose interest or ownership in the inactive hazardous substance or waste disposal site is based on or derived from a security interest in the property.[4]

Site Selection - Scoring Matrix

A model for a site Scoring Matrix is proposed as a screening tool for relative comparative analysis to determine which sites would be eligible for funding. Scores ranging from 0 to 10 points were assigned to a site based on three categories and ten subcategories. Sites with the highest scores would be the ones eligible for funding. An example of the type of scoring matrix that could be used is attached.

The Scoring Matrix was divided into these three separate categories:

- Site Specific;
- Regulatory/Compliance; and
- Public Interest.

Factors considered for the Site-Specific assessment included a cumulative hazard index, occupancy, unmitigated exposure levels, and type of building. Regulatory/compliance considerations based on whether or not the source area was defined or delineated, if a responsible party was identified, the financial solvency of the responsible party and if access agreements were in place to complete any inspections or site assessment work. The sites selection process should also consider public interest including benefits for underserved/ disadvantaged communities.

[4] *Notification of an Inactive Hazardous Substance or Waste Disposal Site*. North Carolina Department of Environmental Quality.

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Residential Property Defined

The need for minimizing exposure to intrusive vapors for any period of time is important protection of human health. Based on exposure duration, the FS Subgroup proposes expanding the definition of Residential from the current single and multi-family residences. The proposed expanded definition of residential includes Commerical/Institutional properties and public gathering spaces.

Examples of Commerical/Institutional properties included in the proposed expanded definition of residential include:

- Day-care facility;
- Nursing home;
- Hospital;
- Clinic; and
- Schools.

Also included are public gathering places that include the potential for short-term or long-term exposure. Examples of these types of facilities include:

- Places of Worship;
- Commercial retail/wholesale/strip malls; and
- Community/Municipal buildings.

Sensitive Population

The impact of intrusive vapors, even at short exposure durations, can have a disproportional detrimental effect on sensitive populations that may result in adverse health impacts or even hazardous conditions. Sensitive populations are more likely than other persons in the general population to experience illness due to exposure to intrusive vapors.

As a result of their health condition, age, or previous exposure to intrusive vapors, members of the sensitive population may spend more time inside buildings than out. Examples of intrusive vapor exposure pathways for the sensitive population includes:

- A legally permitted residence, including, but not limited to, a private home, apartment, condominium unit, group home, dormitory unit, retirement home, or shelter.
- A health care facility, including, but not limited to, any hospital, medical clinic, community clinic, medical center, nursing home, elderly housing, long-term care facility, hospices, convalescent facility, or similar live-in housing.
- A school, including, but not limited to, preschool, prekindergarten, or school maintaining kindergarten or any of grades 1 to 12, inclusive.
- A licensed daycare facility.
- A community center.
- An established community place of worship.
- A public playground, public recreation field, or public recreation center.

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Potential Funding Sources

In order to accomplish the objectives listed above, we also propose the following funding mechanisms for consideration.

Potential Funding sources:

- Reintroduction of Revitalize Wisconsin (former Assembly Bill 1055);
- Creation of an Environmental Stewardship tax credit program for companies doing business in the State of Wisconsin;
- Capture gas tax revenue used on former PECFA program;
- Lottery Credits/Funding;
- Movement of fees for environmental programs (matching funds, cost-recovery, fines) from general fund back to WDNR ;
- Stand-alone program funded though legislative/statutory process;
- Vapor Mitigation System Inspection Fees;
- Create Environmental Bonding Authority exclusively for Environmental Repair Sites;
- Environmental surcharges for development at non-brownfield sites; and
- Prime Real Estate development fees.

Some of these revenue sources would require additional research/analysis as well as additional resources for fee collection and implementation. It is the opinion of this subgroup that legislative support is needed to establish the Fund as a solution to the vapor intrusion health risks discussed in this issue paper.

FUND Awards

Access to the Fund as described would be unrestricted since the intent of the Fund is to provide protection of human health from harmful intrusive vapors under all risk scenarios. An applicant would need to demonstrate financial need via a thorough vetting process and according to their Site Selection – Scoring Matrix ranking.

Since the potential health risks may be unknown in certain circumstances (e.g., residential, commercial institutional spaces) use of the Fund can also be accessed by local and state government administrative staff (e.g., local health departments, WDNR). Administrative Fund use would apply to any of the direct services determined by the governing agency. Administrative Fund use would include investigation, remediation and long-term OM&M costs.

All of the money used under the Fund would be subject to cost-recovery either via a RP, insurance policy reimbursement or formal legal action or other mechanism not identified here. Entities that apply for funding that have assets above threshold values (to be determined) may utilize the Fund but would be subject to cost recovery with an interest component. Any funds obtained from the cost recovery process would come back to the WDNR to be used for administrative support (FTE/LTE) and Fund program continuation.

Funds dispersed would be in the form of:

- Grants;
- Short-term loans;
- Cost reimbursement (similar to PECFA); and

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- Any method previously employed by the WDNR from previous program administration.

Recommendations

The FS Subgroup recommends:

- Not to redefine the terms underserved community/environmental justice or innocent landowner but to use these criteria already defined in state and federal statutes;
- Agency Discretion similar to that of the EPA Enforcement Discretion be employed to determine the eligibility of an innocent landowner under the Fund;
- A first-in/first-out policy is **not** implemented for the Fund. First-in/first-out can limit funding opportunities for the general public and create funding inequities in the Fund seen in other programs; and
- Funding should also be available to innocent landowners required to mitigate hazardous vapors as part of an emergency response.

ENVIRONMENTAL JUSTICE

The establishment of the Fund would support site remediation and continuing obligation system operation and maintenance at all sites not just those that are desirable for redevelopment. Most vapor intrusion sites where a responsible party is not addressing the vapor concerns are in underserved communities.

RESOURCES NEEDED

Bipartisan Legislative support is needed to establish the Fund as a mechanism to provide financial relief support.

The Fund proposal and recommendations were created under the assumptions that the FS Subgroup was to approach the issue statements from a high level. It would be the WDNR's responsibility for refining the recommended methos and implementation of the Fund.

ATTACHMENTS

WDHS letters to the WDNR.
Site Scoring Matrix

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Possible Scoring Matrix

Cumulative Hazard	Occupancy
Multiple Contaminants - 10 Single with High hazard index -5 Single with Low hazard index – 3	High Risk Occupants – 10 Occupied Space 10+ hours/day – 10 Occupied Space 5-9 hrs/day -5 Average intermittent occupation (< 5 hrs/day) 3
Unmitigated Exposure Level	**Type of Building**
5x's calculated exposure limit – 10 2-4 x's calculated exposure limit – 5 At or below calculated exposure limit - 1	Residence – 10 Business – 5 Intermittently occupied space -3

ISSUE PAPER: ESTABLISHMENT OF A MITIGATION CONTRACTOR CERTIFICATION PROGRAM

Vapor Intrusion EAG Subgroup

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Type of Recommendation

This issue paper is to document the business need for mitigation contractor certification in Wisconsin and related issues for consideration. Discussions have been led by an ad hoc committee consisting of volunteers from the DNR's Remediation and Redevelopment External Advisory Group's (RR EAG) Vapor Intrusion Subgroup. A mitigation certification program is being considered to address issues with contractor qualifications and accountability identified in Wisconsin with both radon and vapor intrusion mitigation systems. The National Radon Proficiency Program (NRPP), which is administered by the Indoor Environments Association (IEA), also known as AARST, is working to develop and finalize credentials for vapor intrusion mitigation on a national level. The goal of mitigation contractor certification is to ensure soil gas mitigation systems, designed and installed by qualified personnel according to established industry consensus standards, are protective of the health of occupants and limit potentially harmful exposures. Recommendations by the RR EAG will not be developed until the NRPP vapor intrusion mitigation credential program has been finalized and subsequently reviewed by Wisconsin stakeholders. Information memorialized in this issue paper will be further considered at that time.

Background [Consider listing headers and moving text to Appendix]

Need for a Mitigation Certification in Wisconsin Program

A collective regulatory and public sector body of evidence is growing to show that mitigation needs to be performed by qualified personnel. The work should be compliant with established national standards and in a system where the qualified personnel will be held accountable for their work. Since Wisconsin is primarily surrounded by states that license radon mitigators (MN, IA, IL & IN), it is important both within Wisconsin and regionally to ensure this gap in oversight coalesces under national standards.

Regulation through Certification. The simplest way to move forward is to leverage the regulation through certification (RtC) approach established for radon mitigation as a result of various efforts by the US Environmental Protection Agency (EPA), other states, and national industry-led non-profit organizations. Radon policies in 10 of the 20 states that

presently regulate radon services use the RtC model. This approach relies on certification by existing EPA-recognized national proficiency programs to qualify personnel for eligibility to have a state license. Licensing supplements the proficiency qualification process to enable in-state compliance and enforcement activities, and supports any customization needed to match local conditions. States that enact new regulatory policies can leverage established proficiency systems rather than create new mechanisms for job definitions and task analyses, qualifications, examination item development, exam delivery and proctoring, training approvals, renewal eligibility requirements, and other components of credentialing.

Current Standards. There is no current mitigation standard in Wisconsin. Nationally, the ten RtC states and four other regulated states require compliance with EPA-recommended American National Standards Institute (ANSI)/AARST standards for radon measurement and soil gas mitigation, while the other six regulated states continue to use legacy standards that were created by the state or EPA, or a combination of ANSI/AARST and legacy standards. The only relevant consensus standards that cover both radon and vapor mitigation are:

1. The ANSI/AARST soil gas mitigation standards:
    a. Soil Gas Mitigation Standards for Existing Homes, (SGM-SF-2023) and
    b. Soil Gas Mitigation Standards for Existing Multifamily, School, Commercial and Mixed-Use Buildings (SGM-MFLB-2023)
2. The ANSI/AARST Operation, Monitoring and Maintenance (SG-OMM) standard under development.

The AARST Consortium on National Standards is an ANSI-accredited standards development organization.

Current Proficiency Programs. The two proficiency programs currently recognized by EPA are the NRPP (administered by the IEA) and the National Radon Safety Board (NRSB). In March 2023, the EPA released Proposed Radon Credentialing Criteria which will help align and encourage consistency across radon credentialing programs operated by certification bodies and states. The criteria are designed to support establishment and maintenance of a base level of organizational and program-specific competencies, grounded in third-party accreditation to International Organization for Standardization/International Electrotechnical Commission (ISO/IEC) 17024:2012. Finalization of EPA's approval criteria may change future recognized credentialing programs.

Oversight Board. The IEA (AARST) model RtC legislation relies on an oversight licensure board, like a plumbing board, medical examining board, or geologist board that involves volunteer industry members and empowers them to insist on oversight and impose penalties for non-performance. One approach in Wisconsin would be to establish a board within Wisconsin Department of Safety and Professional Services (DSPS) to oversee all mitigation professionals. From a national perspective, Kentucky enacted this approach in its radon law. Advocates in Maryland, Missouri and North Carolina include a board in their

proposed radon laws. IEA's Virginia Chapter is seeking to move regulatory oversight from the Health Department to the Asbestos and Lead Board in the state's Department of Professional and Occupational Regulation.

Additionally, Chapter 15 of the Wisconsin Statute, Structure of the Executive Branch, grants the creation of DSPS and its authority to host examining boards and councils for various professional services. DSPS leads administrative activities that help each board and council achieve its goals, including managing the issuance and denial of licenses and license applications. While DSPS does not currently have a soil gas-related board, current infrastructure exists that could support development of such a board at DSPS.

State Agency Roles and Interrelationships

The Department of Health Services (DHS) and Department of Natural Resources (DNR) are overseen by separate committees in the Wisconsin Legislature but overlap extensively in their respective duties to ensure public protection from harmful naturally occurring and chemical soil gas exposures. The DHS has long-standing federally funded programs that support radon and vapor intrusion exposure prevention through human health risk assessment, expert consultation, and statewide public health education and outreach efforts. The DNR, through the Remediation and Redevelopment Program, regulates chemical vapors from spills under the authority of the "spill law" (Wis. Stat. § 292.11). Together, the DHS and DNR collaborate to ensure Wisconsin citizens are sufficiently protected from chemical vapors resulting from hazardous spills.

In 2023, the Department of Children and Families (DCF) enacted new rules to protect children enrolled in licensed child care from exposure to high levels of radon gas. Together, the DHS, DNR, and DCF work to promote the safety of children enrolled in licensed child care and their caretakers and prevent harmful soil gas exposures at and near contaminated sites. In the absence of state regulation ensuring that mitigation service providers who perform work in child care facilities are qualified and adhering to industry consensus standards, the DCF relies on the DHS's radon expertise to provide on-going radon-related guidance to child care providers and child care licensing staff.

The design and installation of vapor intrusion mitigation systems is administered through Wisconsin Administrative (Wis. Admin.) Code chs. NR 700-799. The DNR guidance document "Addressing Vapor Intrusion at Remediation and Redevelopment Sites in Wisconsin" (RR-800) also provides information on vapor intrusion mitigation systems. However, there is not a uniform standard for design and installation of vapor intrusion mitigation systems. As discussed above, regulation of radon in Wisconsin is currently limited to testing and mitigation associated with licensed family and group child care providers, as established by DCF. DHS provides information with respect to radon but does not regulate radon measurement or mitigation. The State of Wisconsin does not require contractors performing radon mitigation work to hold a national certification of any sort.

There are no regulations providing consumer protection or accountability with respect to mitigation services in Wisconsin. The significant overlap in regulation over radon and vapor

intrusion mitigation make it necessary (and efficient) for collaboration between DNR and DHS on all mitigation. Because all state agencies with roles and responsibilities related to radon and vapor intrusion routinely interact with each other on these issues, an umbrella law requiring oversight and credentialing of radon and vapor intrusion mitigation contractors would integrate well among the agencies' independent and shared responsibilities and interests.

Current Status and Challenges of Mitigation

The absence of a license requirement for radon or vapor intrusion mitigation systems has contributed to several challenges:

Inadequate Design. While standards for soil gas mitigation systems have been developed by ANSI/AARST, the standards are applied unevenly by designers and installers. With respect to vapor intrusion mitigation, the lack of required use of national standards or proof of qualification to perform the work has led to project delays when DNR must request revisions to designs or already installed mitigation systems. Inadequate mitigation systems do not accomplish the required protection of human health from exposure to chemical vapors (See Health Implications for Certification).

Challenges in Regulated Child Care. In March of 2023, DCF enacted new rules which require licensed child care centers to test for radon and mitigate when levels exceed the EPA Action Level of 4 picocuries per liter (pCi/L). Centers must conduct one radon test in the lowest level used by children at least seven hours per week and for a minimum of 48 hours with the center's windows being closed. The DCF rules do not specify which types of tests are acceptable or which people are sufficiently qualified for testing and mitigation depending on the building type. These rules are further outlined in Wis. Admin. Code, DCF § 250.06 for family child care centers (typically in-home based) and Wis. Admin. Code, DCF § 251.06 for group child care centers (typically based in larger, commercial spaces).

Without a license requirement for radon service providers in Wisconsin, child care centers are unable to verify contractors are qualified for testing or mitigation to meet child care licensing requirements. This can lead to problems where industry consensus standards are not followed. These problems include but are not limited to the inappropriate number and placement of test kits in the facility, use of less accurate or poor performing radon measurement devices, inadequate mitigation system installations, and lack of quality assurance and quality control checks. These issues may lead to unintended radon exposures, undermining the State's goal to eliminate harmful exposures among children enrolled in licensed care, and their staff.

Consumer Protection. Consumers do not have the appropriate expertise to properly vet mitigation system installers. They are unlikely to be aware of the potential dangers posed by inadequate construction practices or faulty installation of soil gas mitigation systems or understand if a mitigation system fails due to poor or improper installation. Early failure of mitigation systems is unlikely to be detected by the average consumer, as many soil gases have negative health effects without a detectable presence. While harmful soil gases such

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as radon present long-term health concerns, exposure to certain chemical vapors may present acute health concerns. See *Health Implications*. A certification process protects consumer health by ensuring knowledge of and adherence to an established set of guidelines during the evaluation, installation, assessment, and maintenance phases and serves to minimize the costs associated with this work when qualified contractors are assured.

Worker Health. Conditions before a mitigation system is installed may be hazardous to health. Certification of contractors ensure they are equipped with knowledge to protect their health during the installation process. This includes a need to have adequate knowledge of health protection for vapor intrusion sites. This is typically achieved by the US Occupational Health and Safety Administration (OSHA) Hazardous Waste Operations and Emergency Response (HAZWOPER) training and certification courses. In addition to potential exposure to environmental contamination, modifications to mitigate existing buildings may include the need for asbestos and/or lead-based paint assessments in advance.

Summary of Challenges. The net result of the common issues listed above is a high presence of unqualified contractors, inadequate installations, no or insufficient performance monitoring, ineffective mitigation systems, etc., resulting in:

- uncontrolled and increased potential for exposure to contaminated vapors and other hazards to building occupants and contractors, and
- additional costs associated with diagnosing/repairing sub-standard mitigation systems.

Health Implications for Certification

Exposures to chemical vapors can pose both an acute and chronic health risk. Petroleum volatile organic compounds (VOCs) such as benzene can cause acute respiratory, gastrointestinal, and neurological impacts, while chlorinated VOCs like trichloroethylene (TCE) can cause both acute central nervous system impacts and developmental harm, as has been outlined in a series of memos from DHS to DNR[1,2,3,4,5]. Specifically, for TCE, in the June 6, 2022 memo from DHS to DNR, DHS states that an 8-hour period of exposure for occupational settings and a 24-hour period for residential settings constitutes a single exposure, since the potential developmental harms of cardiac malformations may occur early on in pregnancy, potentially before the person may have confirmation that they are pregnant. As such, reliable continuous and effective mitigation is necessary.

The most effective long-term method to interrupt vapor exposures is the installation and maintenance of an effective vapor mitigation system. While short-term measures may need to be taken to immediately interrupt exposures to chemicals such as TCE when there are acute risks, such as temporary relocation or using air purifying units, these rapid response actions are intrusive to residents and unsustainable.

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Across Wisconsin, there are sites where there have been acute health risks exacerbated by inadequate mitigation installations by unqualified mitigators. At one highly complex industrial-to-residential conversion with extensive TCE contamination, 150 residents were ordered to evacuate after the developer occupied the building before it was adequately mitigated; an active system was in place, but it was insufficient for protection from the significant levels of subsurface contamination and had not been properly commissioned (i.e., verified effective in protecting against hazardous vapors). In another example, a home with two short-term rental units was improperly mitigated, such that re-entrainment of TCE into living spaces was likely through balconies and the bedroom windows. In each of these cases, a certified mitigator with the appropriate training and knowledge, working with environmental professionals, could have installed controls to prevent these human exposures.

Continuing education is essential as a component of a mitigation certification requirement. As the science continues to develop, new mitigation techniques and potential health risks become available, all of which may modify the best practices for mitigation over time. Continued education ensures that any consumer that needs mitigation will have access to services from mitigators equipped with the best available information.

IEA/NRPP Certification Development –

The NRPP, which is administered by the IEA (also known as AARST), is developing a vapor intrusion mitigation credential separate from the existing radon mitigation credential. The vapor intrusion mitigation credential would add to the current array of NRPP certifications:

- Radon Measurement Professional,
- Radon Mitigation Specialist,
- Radon Measurement Field Technician,
- Radon Mitigation Installer, and
- Soil Gas Mitigation Compliance Inspector.

Additional certifications are under development for commercial radon professionals.

It is anticipated that a vapor intrusion mitigator certification will be available to personnel who are both qualified to perform mitigation and knowledgeable about HAZWOPER but have not necessarily been trained or certified in radon mitigation (or measurement).

NRPP follows a rigorous process to develop a certification to fully fulfill its accreditation by the ANSI National Accreditation Board under ISO/IEC 17024:2012 (See Current Proficiency Programs). The definition of the role and related job tasks, eligibility pathways, assessment/certification process, exam format, recertification interval and requirement are among the steps in certification creation. Current practitioners are surveyed to learn the extent to which tasks within the Job Task Analysis are necessary and important. Exam

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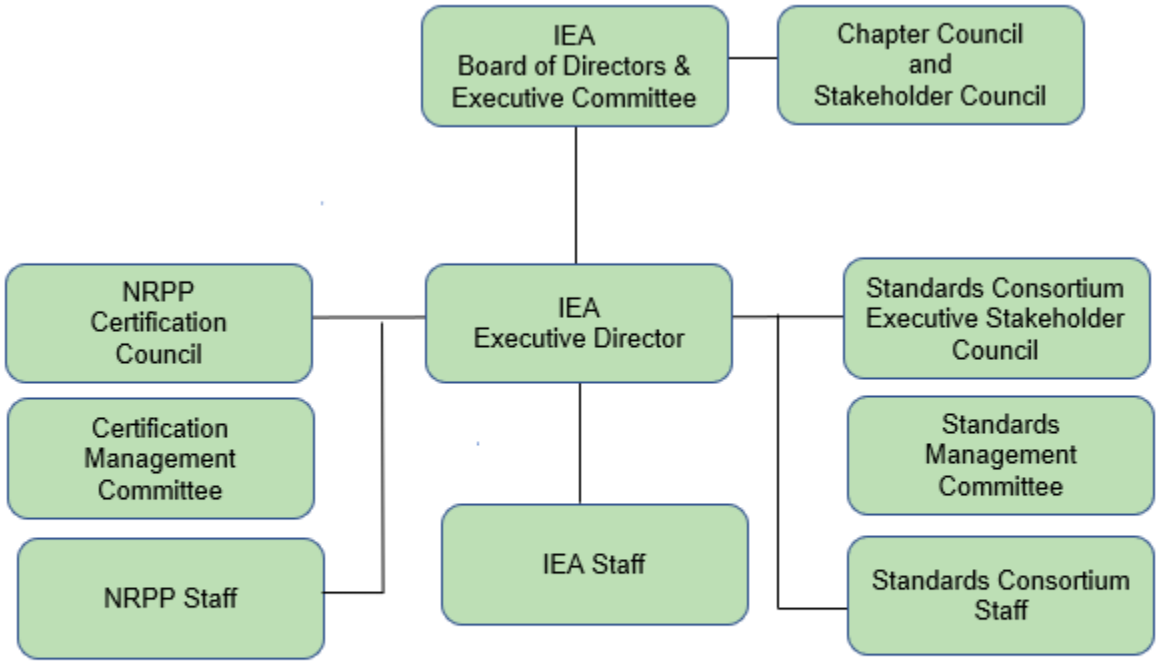
content is developed through volunteer committees of exam item writers and item reviewers. Once the exam is delivered in pilot format, the effectiveness of the items is evaluated to ensure that the items are technically correct and assess knowledge important to the job, and the passing score is established. It is anticipated that pilot testing for the VI Mitigation Specialist will occur by the end of 2025.



Preventing Conflicts with Existing Regulations

Initial discussions with IEA included certification provisions that may be applicable to mitigation system designers and performance verification. While limited regulations exist in Wisconsin with respect to radon, the Wis. Admin. Code NR 700 rule series include several areas that are associated with site investigation, interim/immediate action, and regulatory closure. For example, Wis. Admin. Code ch. NR 712 establishes personnel qualifications for conducting environmental response actions. The scope of mitigation licensure based on private certifications must not conflict with these or other existing regulations. Previous discussions expressly deferred to the Wis. Admin. Code NR 700 rule series for vapor intrusion investigation.

NRPP certifications may also include provisions for system commissioning, which would likely include air monitoring. Laboratory accreditation is regulated by the DNR under Wis.

Admin. Code ch. NR 149. However, the DNR does not currently regulate the analysis of air samples in Wisconsin by laboratories. Adoption of certification programs must recognize the absence of such accreditation. NRPP is not currently pursuing an ANSI/AARST vapor intrusion sampling standard.

Applicability of Certifications to Subcontractors

It is common to engage various trades, such as plumbers and electricians, during the installation of mitigation systems. If the adoption of mitigation certification programs is pursued in Wisconsin, these subcontractors should either be supervised by certified mitigators or be certified mitigators themselves. Construction managers (e.g., general contractors, owners' representatives) not performing hands-on work should not be required to be certified mitigators but engage certified mitigators to verify installation of mitigation systems are in accordance with the design specifications. It may be appropriate to create a series of certifications similar to the DHS Lead Certification program where certification requirements range from a minimum 8-hour course and fee to a 40-hour course, experience, fee and exam. Lead and asbestos abatement-related rules in Wisconsin also have safety requirements during work to prevent exposure to the hazard that may serve as an example for development of mitigation certification in Wisconsin.

Additional Considerations

The US Department of Housing and Urban Development (HUD) requires mitigation certification for multi-family structures (for radon) and is looking to include soil gas standards. HUD's Environmental Review Program includes radon and vapor intrusion. [*Placeholder for additional input from HUD representatives*.]

Development of a mitigation certification program in Wisconsin also needs to address potential for loopholes to regulation by marketing for services that are intended to address radon or vapor intrusion mitigation but are advertised differently to avoid regulation, such as "radon resistant", "moisture reduction", "off-gas" systems, etc. Focusing regulation on the *performance* rather than the product name may address these concerns. Performance-based language may include "protection from or reduction of soil gas" (includes both radon and vapor intrusion), "any form of depressurization for protection from soil gas", etc.

Proposal

This issue paper recommends continued evaluation of a certification program for mitigation in Wisconsin. Discussions by the RR EAG, including local and national industry stakeholders, will continue following NRPP's completion of credentials for vapor intrusion mitigation.

Future evaluation by the RR EAG may include engaging additional related professionals from a variety of perspectives for a holistic evaluation, such as Realtors, home inspectors, home builders, healthy homes advocates, mitigation installers, etc. Alternatively, these professionals may be included as stakeholders during a future phase of mitigation certification development beyond the RR EAG.

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Resources Needed

To be determined

Environmental Justice

Black and Brown neighborhoods are significantly more likely to live near environmental pollution, including brownfields, toxic air pollution, and commercial hazardous waste facilities, placing these communities at higher risk of soil gas exposure.[6-8] Research has shown that race is a more important determinant than income when it comes to proximity to environmental pollution in the United States.[9-11] Additionally, socioeconomic conditions that intersect with race, such as a tendency to reside in older homes or poor housing quality, exacerbate the risks of soil gas infiltration.[12]

As a result, marginalized populations are substantially more likely to bear the burden of adverse effects and health risks from inadequate mitigation installation. Exposure to soil gases, such as radon and VOCs, can lead to long-term health consequences, including respiratory issues, cancer, and birth defects. Compounding this issue, low-income populations often have fewer resources to fix issues related to inadequate installation, failures caused by mitigator faults, or insufficient design.

To achieve health equity for all populations, it is essential that mitigation systems are installed properly the first time, and a certification/licensure process will ensure a minimum standard for this process that protects human health throughout Wisconsin. Implementing this process will ensure the protection of all communities during the development, installation, assessment, and maintenance of mitigation systems. By establishing clear standards and accountability measures, a certification/licensure framework can ensure that environmental practices are transparent and accessible to all communities.

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[5]https://dnr.wisconsin.gov/sites/default/files/topic/Brownfields/training/20220606_DHS%20response%20to%20DNR%20request%20-%20TCE%20Single%20Expsore%20Clarification.pdf

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