Vapour Intrusion Liability in Ontario: A Focused Review of regulatory frameworks, guidance and professional exposure

Toronto Vapour Intrusion Conference

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Agenda

1. What is vapour intrusion?
2. Statutory foundations under the EPA
3. Regulatory guidance: MECP, Health Canada, and CCME
4. Civil liability overview and case law highlights
5. Consultant liability: design, installation, maintenance, and due diligence
6. Practical tips for managing risk

What is Vapour Intrusion?

Subsurface vapour-phase transport of volatile organic compounds (VOCs) through soil gas into enclosed structures via advective and diffusive migration

Controlling parameters: source concentration and phase distribution, soil permeability, building depressurization (stack effect, HVAC), and foundation integrity

Chlorinated solvents (TCE, PCE, cDCE, vinyl chloride) and petroleum hydrocarbons (BTEX) are the principal contaminant classes

Attenuation factors are site-specific and highly variable — generic models routinely underpredict indoor air concentrations

VI pathway often governs risk assessment outcomes even where soil and groundwater concentrations meet generic standards

Statutory Foundation – Ontario perspective

Environmental Protection Act, R.S.O. 1990, c. E.19 — establishes discharge prohibitions, reporting duties, and the Ministry's enforcement powers

Ontario Regulation 153/04 (Records of Site Condition) — governs site assessment methodology, risk assessment frameworks, and filing requirements under Part XV.1

Together these instruments define the regulatory obligations for site characterization, risk management, and long-term stewardship of VI-affected properties

Key interaction: Reg. 153/04 standards incorporate MECP soil vapour guidelines by reference, creating an enforceable technical benchmark

EPA: Key Concepts for Vapour Intrusion

s. 14 – Discharge Prohibition

- Prohibits discharge of a contaminant into the "natural environment" that causes or is likely to cause an "adverse effect"
- "Natural environment" (s. 1(1)): air, land, water, and all living organisms — includes indoor air within buildings where vapours have migrated from subsurface contamination
- Vapour-phase migration from contaminated soil/groundwater into a building constitutes a "discharge" even absent an active release event

"Adverse Effect" (s. 1(1)) – Seven Enumerated Categories

- Impairment of the quality of the natural environment for any use that can be made of it
- Injury or damage to property or plant or animal life; harm or material discomfort to any person
- Adverse effect on health of any person; rendering property or plant/animal life unfit for human use
- Indoor air VOC concentrations exceeding HC screening levels or MECP standards will generally satisfy one or more of these categories

s. 15 – Reporting Obligations

- Duty to report "forthwith" any discharge into the natural environment that causes or is likely to cause an adverse effect (s. 15(1))
- Reporting obligation extends to "every person who discharges" and "every person who has control of" the contaminant — potentially captures site owners, operators, and consultants managing remediation
- Discovery of VI exceedances during monitoring may trigger a s. 15 reporting obligation independent of spills provisions under Part X

Ministry Orders – ss. 17, 18, 157, 157.1

- Remediation orders (s. 17) and preventive orders (s. 18 — no fault required) can be issued to current/former owners and occupants
- Provincial officer orders (ss. 157, 157.1) allow MECP to require investigation, monitoring, and preventive measures — orders run with the land

Record of Site Condition & Reg. 153/04

VI is frequently the determinative exposure pathway in risk assessments under O. Reg. 153/04, particularly for brownfield redevelopment

Generic site condition standards (Tables 1–9) may not adequately address VI — site-specific risk assessment (SSRA) under O. Reg. 153/04 s. 43 is often required

Long-term risk management measures:

- Active sub-slab depressurization (SSD), passive vapour barriers, and soil vapour extraction (SVE) systems
- Ongoing indoor air and sub-slab monitoring programs with defined action levels

These engineering controls become legal obligations through:

- Certificates of Property Use (CPU) under s. 168.6 — enforceable conditions that bind successors in title
- Risk assessment conditions embedded in the RSC filing

Critical limitation: RSC protection under s. 168.7(1) does NOT extend to contaminants that migrate off-site after the certification date (s. 168.7(3))

Post-filing VI migration can revive liability for current and former owners under s. 18 (preventive orders — no fault required)

MECP Regulatory Guidance

Ontario Soil, Ground Water and Sediment Standards (2011, updated) — Part XV.1 reference standards incorporating soil vapour screening values

Rationale documents and technical guidance establish the methodology for vapour pathway assessment: soil gas sampling protocols, attenuation factor selection, and indoor air modelling

Standards are not strictly binding as law, but courts consistently treat them as defining the professional standard of care (see *Midwest, Huang*)

Non-compliance with MECP guidance is prima facie evidence of failure to meet the duty of care in negligence actions

Proposed MECP *Technical Guidance for Soil Vapour Intrusion Assessment* (ERO 019-2557, 2021) — expected to formalize soil gas characterization requirements, preferred attenuation models, and mitigation performance criteria

MECP enforcement discretion is informed by these technical frameworks — provincial officers can routinely reference them in orders under ss. 157 and 157.1

Health Canada & CCME Guidance

Health Canada Residential Indoor Air Quality Guidelines — establish toxicological reference concentrations (TRCs) for volatile contaminants including TCE, PCE, benzene, and naphthalene

CCME Guidance Manual for Environmental Site Characterization (2nd Ed.) and Protocol for VI assessment inform sampling design and data interpretation

Federal guidance informs Ontario practice in several ways:

- Health Canada TRCs are used as screening levels in site-specific risk assessments
- CCME vapour pathway modelling approaches (Johnson & Ettinger, bioattenuation factors) are referenced in Ontario guidance

Courts may reference federal guidance when evaluating whether a consultant's risk assessment methodology met the standard of care

Particularly relevant for multi-pathway cumulative risk assessments where VI is one of several exposure routes

Evolving federal guidance (e.g., updated HC TRCs for TCE, 2021) can retroactively shift expectations for what constitutes a defensible assessment

Civil Liability Overview

Nuisance

Negligence

Trespass

Strict Liability (Rylands v. Fletcher)

Case Law Highlights

Contamination Migration – Statutory and Common Law Claims

- **Midwest Properties v. Thordarson (2015 ONCA 819):** $1.3M + $100K punitive damages; petroleum hydrocarbon migration via groundwater. Established s. 99(2) EPA as strict liability "new and powerful tool" — no fault element required. SCC leave denied.
- **Canadian Tire v. Huron Concrete:** Free-product gasoline and vapour-phase migration beneath adjacent commercial building. Claims sustained under nuisance, negligence, strict liability (Rylands v. Fletcher), and trespass.

Regulatory Enforcement & Professional Negligence

- **Oakville Third Line (EPA conviction):** $6,250 fine for failure to submit VI mitigation plan pre-construction as required by CPU conditions under s. 168.6.
- **MVL Leasing v. CCI Group (2018 ONSC 1800):** Environmental consultant sued for professional negligence — Phase I/II ESAs failed to characterize subsurface contamination. Court examined scope of retainer, industry standards, and reliance.

Key Principle

- Canadian courts treat subsurface contaminant migration as the operative cause of action — vapour intrusion is a recognized pathway triggering liability under s. 99(2) EPA, nuisance (no foreseeability required per Huang), and professional negligence.

Consultant Liability

- Design Liability
- Installation Oversight
- Maintenance & Monitoring
- Due Diligence & Disclosure
- Risk Management
- Practical Tips

Consultant Liability: Design

Failure to characterize VI pathways in the conceptual site model (CSM): preferential pathways (utility corridors, fractured bedrock, permeable fill), source-receptor geometry, and building vulnerability

Inadequate soil gas characterization — insufficient spatial coverage, improper sampling methodology (e.g., failure to follow MECP or O. Reg. 153/04 protocols), or reliance on inappropriate attenuation factors

Mitigation system design that cannot achieve regulatory performance criteria (e.g., sub-slab pressure differentials, indoor air target concentrations)

Standard of care analysis:

- Was the CSM consistent with available site data and current guidance?
- Were soil gas sampling locations and depths sufficient to delineate the vapour source?
- Did the design account for site-specific conditions including building construction, HVAC configuration, and seasonal variability?
- Would a reasonably competent QP, given the same information, have reached the same conclusions?

Consultant Liability: Installation Oversight

Construction quality assurance (CQA) failures can render a well-designed VI mitigation system ineffective

Common deficiency areas:

- Vapour barrier membrane — inadequate overlap, improper sealing at penetrations, damage during concrete placement
- Sub-slab depressurization — insufficient suction points, poorly sealed sumps, inadequate aggregate layer permeability
- Building envelope — unsealed utility penetrations, elevator shafts, and slab-on-grade joints

Consultant exposure:

- Remediation costs for system retrofit or replacement
- Delay damages and consequential loss claims from project owners
- Third-party exposure claims from building occupants (indoor air exceedances)

CQA documentation (inspection logs, photo records, deviation reports) is the primary defence against installation-related claims

Scope of oversight obligations must be clearly defined in the retainer — distinguish between periodic inspection and continuous supervision

Consultant Liability: Maintenance & Monitoring

Active VI mitigation systems (SSD, SVE) require ongoing performance verification against defined operating parameters

Ambiguity in maintenance obligations is a recurring source of liability — CPUs, regulatory approvals, and contractual instruments may impose overlapping duties

Critical questions for risk allocation:

- Who bears responsibility for system maintenance post-handover? Owner, developer, or consultant?
- What performance benchmarks apply? Sub-slab differential pressure, indoor air concentrations, system flow rates?
- What monitoring frequency is required and what triggers corrective action?
- What are the reporting obligations to MECP and/or affected third parties?

Indoor air exceedances discovered during post-construction monitoring can generate claims under nuisance, negligence, and s. 99(2) EPA

Written maintenance protocols with defined trigger levels, response timeframes, and chain of responsibility should be established at project inception

Monitoring data quality — proper QA/QC, representative sampling conditions, and defensible analytical methods — is essential for regulatory and litigation purposes

Consultant Liability: Due Diligence & Disclosure

Phase I and Phase II ESA requirements:

- Identification of potential vapour migration risks from on-site and off-site sources (adjacent dry cleaners, gas stations, industrial operations)
- Evaluation of preferential pathways and building vulnerability factors
- Assessment of subsurface conditions that may facilitate or attenuate vapour transport

Failure to identify foreseeable VI risks constitutes a breach of the standard of care under O. Reg. 153/04 and professional negligence law

Judicial and regulatory assessment criteria:

- Foreseeability: was the VI risk reasonably foreseeable given available site data and surrounding land uses?
- Scope and limitations: did the retainer define the assessment scope, and were limitations clearly communicated?
- Third-party reliance: who relied on the assessment (lenders, purchasers, tenants) and under what terms?
- Documentation: were professional judgment decisions, field observations, and regulatory communications recorded contemporaneously?

Reliance letters and limitations of liability must be carefully scoped — unlimited third-party reliance creates unbounded exposure

Record-keeping discipline is the consultant's primary defence when claims emerge years after project completion

Case Study: Huang v. Fraser Hillary's

Huang v. Fraser Hillary's Limited (2017 ONSC 1500; aff'd 2018 ONCA 527)

Former dry-cleaning operation discharged PCE and TCE into subsurface; chlorinated solvent plume migrated via dissolved-phase groundwater transport to plaintiff's adjacent property

$1.8M+ damages awarded under s. 99(2) EPA (statutory compensation) and nuisance

Key legal holdings:

- Foreseeability is NOT an element of nuisance in Ontario — historical contamination of which the defendant had no knowledge can ground liability
- s. 99(2) EPA imposes statutory liability for "loss or damage" from contamination — no proof of fault or traditional tort elements required
- Liability attaches to "person who owns or owned" the source property — successive ownership does not extinguish the statutory claim

Implications for environmental consultants:

- PCE, TCE, and chlorinated degradation products (cDCE, vinyl chloride) are among the most common VI contaminants — vapour pathway assessment is mandatory when these compounds are identified
- Phase I ESAs must evaluate adjacent and up-gradient land uses as potential off-site sources (CSA Z768 and O. Reg. 153/04 requirements)
- Failure to assess off-site migration risk where chlorinated solvents are present may constitute a breach of the professional standard of care

Practical Tips for Managing Risk

- Clearly define scope of work, purpose, and reliance in all proposals and reports
- Establish written maintenance protocols and post-construction monitoring obligations
- Document all conversations, field observations, and professional judgment decisions
- Review and update contractual limitations, insurance coverage, and indemnification provisions
- Conduct due diligence beyond minimum regulatory requirements; stay current on evolving standards

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Thank you!

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Q & A

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