Proven Vapor Barriers For New Construction

More Protective, More Cost-Effective.

landsciencetech.com

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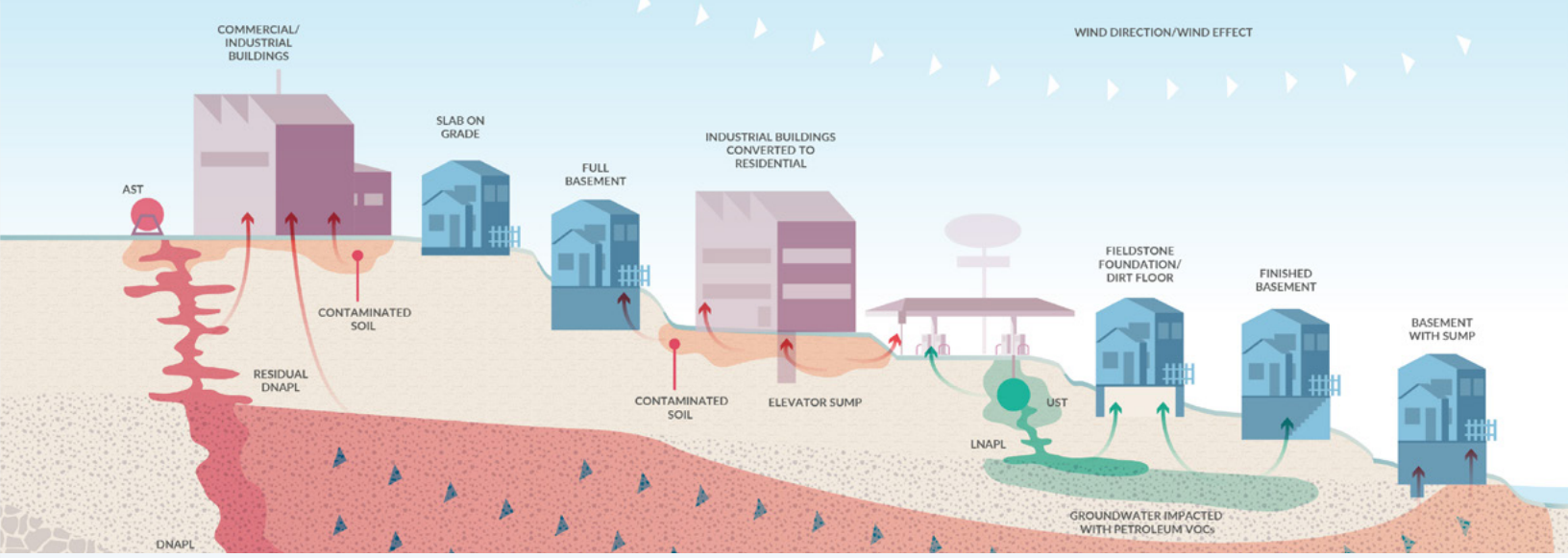
Land Science Vapor Intrusion Solutions

As experts in the field of contaminant vapor intrusion mitigation, Land Science® works with leading engineering firms, environmental consultants, building owners, and real estate developers to offer safe and effective contaminant vapor intrusion mitigation solutions in the redevelopment of brownfield sites.

As risk standards and other compliance issues associated with contaminant vapor intrusion continually evolve, engineered controls like those offered by Land Science provide a practical, cost-effective solution to eliminate risks. Recent advances in contaminant vapor intrusion mitigation developed by Land Science have assisted developers, engineering firms, regulators, and land owners by providing technically sound solutions effectively mitigating these issues.



Contaminant Vapor Intrusion Defined

What is contaminant vapor intrusion? Simply stated, contaminant vapor intrusion is the transport of chemical vapors from subsurface soils and/or groundwater into buildings through diffusion and advection due to barometric pressure changes, wind load, thermal currents, or depressurization from building exhaust fans. Contaminant vapor intrusion is highly site specific due to varying natural conditions, contaminants and migration pathways. A few of the common variables affecting contaminant vapor intrusion include: contaminant type (i.e. petroleum compounds or chlorinated solvents), type of soils beneath the structure, contaminant concentration, exposure/contaminant migration pathways (like foundation cracks and utility trenches) depth and location of contaminants relative to the structure, and building ventilation system design.

Why is Mitigation of Contaminant Vapor Intrusion Important?

For developers and engineers, successful mitigation of vapor intrusion is paramount to protect human health for regulatory compliance and liability protection. In the past, regulatory closures typically evaluated soil and groundwater exposure pathways, but did not always include evaluation of vapor migration into buildings. As a result, closed regulatory cases in several states have been reopened in order to include evaluation of vapor intrusion, and in many cases, installation of vapor mitigation systems.

In addition, vapor cases are becoming topics of litigation, which could potentially cause property owners or lenders severe monetary and reputational risks. The “end game” is this: due to the fact that many past regulatory closures left contamination in place in soil on a site, many existing developments, even if constructed in the last few years, are being scrutinized for vapor by lenders and regulatory authorities.

Why Mitigate?

- Protect human health
- Reduce cost of site remediation
- Expedite site construction
- Reduce site investigation and evaluation
- Protect client’s investment
- Reduce risk and liability
- New regulatory requrements

TerraShield®

Aluminum Nitrile
Vapor Barrier

Technology

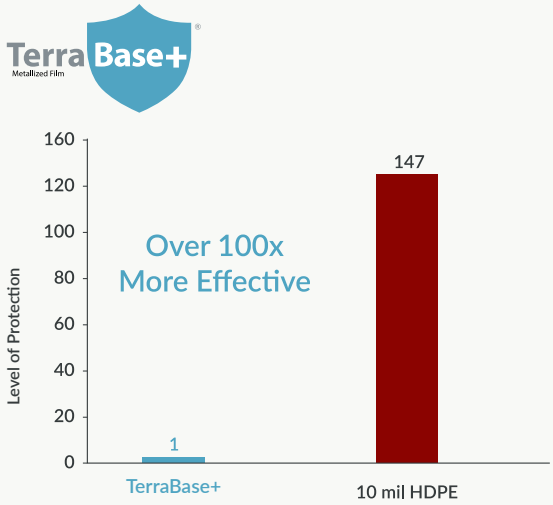
A Multi-Layer Base with Innovative Metallized Film Technology

The Land Science research and development team of scientists have invested years in developing the TerraShield vapor barrier system and advancing the materials commonly used in composite spray-applied barriers. The base layer of the system now provides over 100x greater chemical resistance versus a traditional HDPE sheet good, due to the innovative combination of aluminum metallized film and polyethylene.

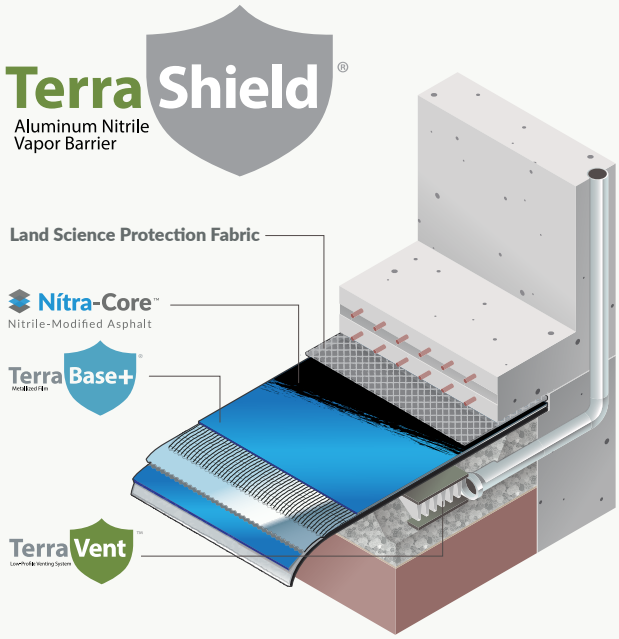
Nitrile-Advanced Asphalt Latex Technology

Land Science researchers have developed a break-through technology which incorporates nitrile, a material known for enhanced resistivity to contaminant permeation, into the spray applied core formulation. The resulting nitrile-advanced asphalt latex core component offers an improvement of up to 10x in chemical resistivity compared to generic asphalt-latex spray applied barriers.[1]

1. U.S. and international patents pending.



Accelerated comparison showing the relative TCE flux through the vapor barrier base components: TerraBase+, an innovative metallized geomembrane film, versus 10 mil HDPE.



Nitrile-Advanced Asphalt Latex Compared to Generic SBR Asphalt Latex

Nitrile-Advanced Asphalt Latex

- Lab-proven to provide 10x higher chemical resistance
- Easier and faster to apply
- Equipment requires only soap and water to clean

Generic SBR Asphalt Latex

- Higher permeability increases risk of contaminant sorption
- Longer, slower application time
- Equipment requires petroleum-based solvents to clean

Nítra-Seal®

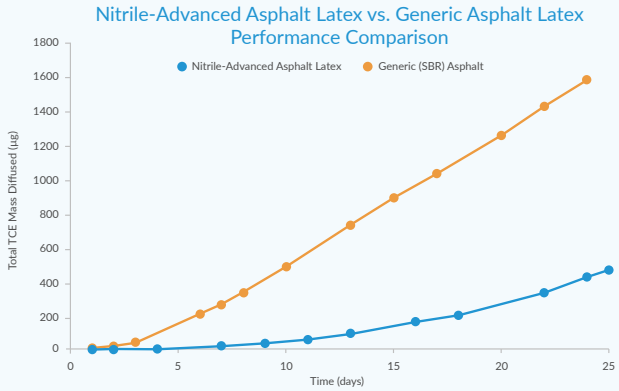
Nitrile-Advanced Vapor Barrier

Technology

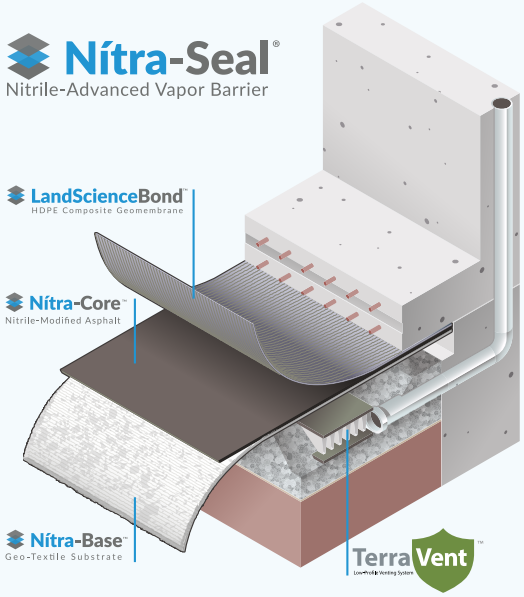
A Multi-Layer Base with Innovative Nitrile-Advanced Asphalt Latex Technology

Nitra-Seal is an update/improvement on current vapor barrier systems, providing a more chemically resistant spray-applied core material.[1] Nitra-Seal is a triple-layer system. The Nitra-Base layer (bottom) and the Land Science Bond layer (top) are composed of a HDPE material bonded to a geo-textile on the out-facing side. HDPE is known for chemical resistance, high tensile strength, excellent stress-crack resistance and highly reliable subsurface containment. The geo-textile, which is physically bonded to the chemical resistant layer, accomplishes two goals; it allows the Land Science Bond layer to adhere to the slab, and provides friction course between the Nitra-Base layer and the soil. The Nitra-Core layer is composed of a unique, nitrile-advanced asphalt latex which also provides additional protection against vapor transmission. Nitrile has been proven to offer exceptional chemical resistance in a wide range of applications. This layer creates a highly-effective seal around slab penetrations and eliminates the need for mechanical fastening at termination points.

1. U.S. and international patents pending.



TCE diffusion rates in Nitrile-Advanced Asphalt Latex barrier systems vs those utilizing Generic (SBR) Asphalt.



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MonoShield®

Reinforced Aluminum
Contaminant Vapor Barrier

Technology

Innovative Metallized Film Technology

Composed of an innovative metallized film that sets the standard for preventing diffusion and permeation of chemical vapors and a nitrile-advanced asphalt latex that ensures a seal far more effective and easier to apply than tape-based or heat-welded systems, MonoShield offers the best of both worlds, providing developers with a viable long-term solution for reducing liability and protecting human health at a competitive cost.

Nitrile-Advanced Asphalt Latex Technology

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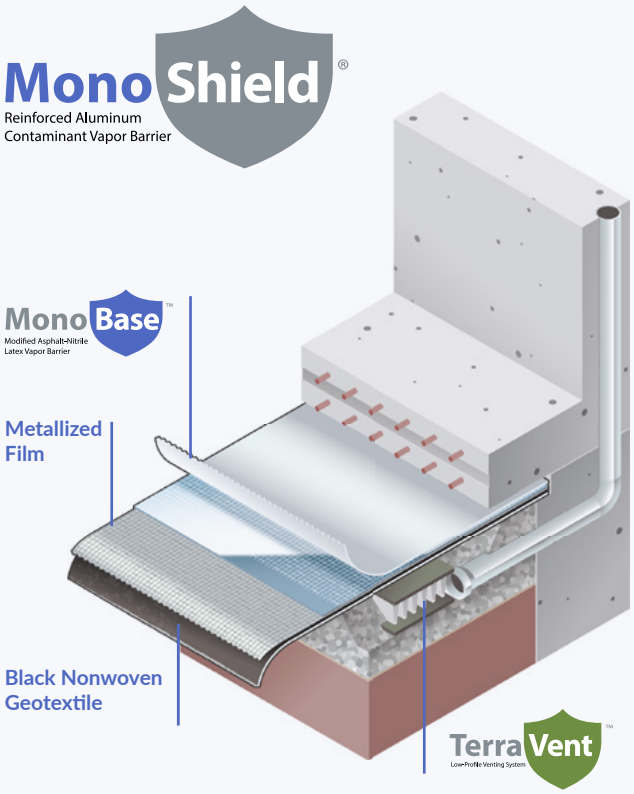

Nitrile-Advanced Asphalt Latex Seams vs. Taped Seams

Example of Nitrile-Advanced Asphalt Latex Seams

MonoShield applications utilize a spray-applied nitrile-advanced asphalt latex to seal seams and penetrations, eliminating bottlenecks in performance and installation time.

Example of Taped Seams

Traditional vapor barrier installations require taped seams which contributes to long construction times and uncertainty in performance.

Land Science and REGENESIS Working Together for Your Success

As a wholly-owned division of REGENESIS®, a recognized leader in the environmental industry, Land Science has been at the forefront of vapor intrusion mitigation. With combined experience in vapor intrusion mitigation and environmental remediation that encompasses more than 26,000 projects worldwide in over 27 countries, Land Science has a unique advantage over other vapor intrusion solution providers.

In addition to its own research and science-based product development, Land Science benefits from its close association with REGENESIS by aligning teams and managing a broad range of vapor intrusion mitigation issues. These products and solutions include patented vapor mitigation and environmental remediation technologies supported by the highest levels of scientific research.

World Class Clients

Environmental consultants, engineers, and real estate professionals trust Land Science to produce results knowing our expertise and industry knowledge has been proven time and again at the job site. Our world class clients include leaders in the food, banking, government, and housing industries.

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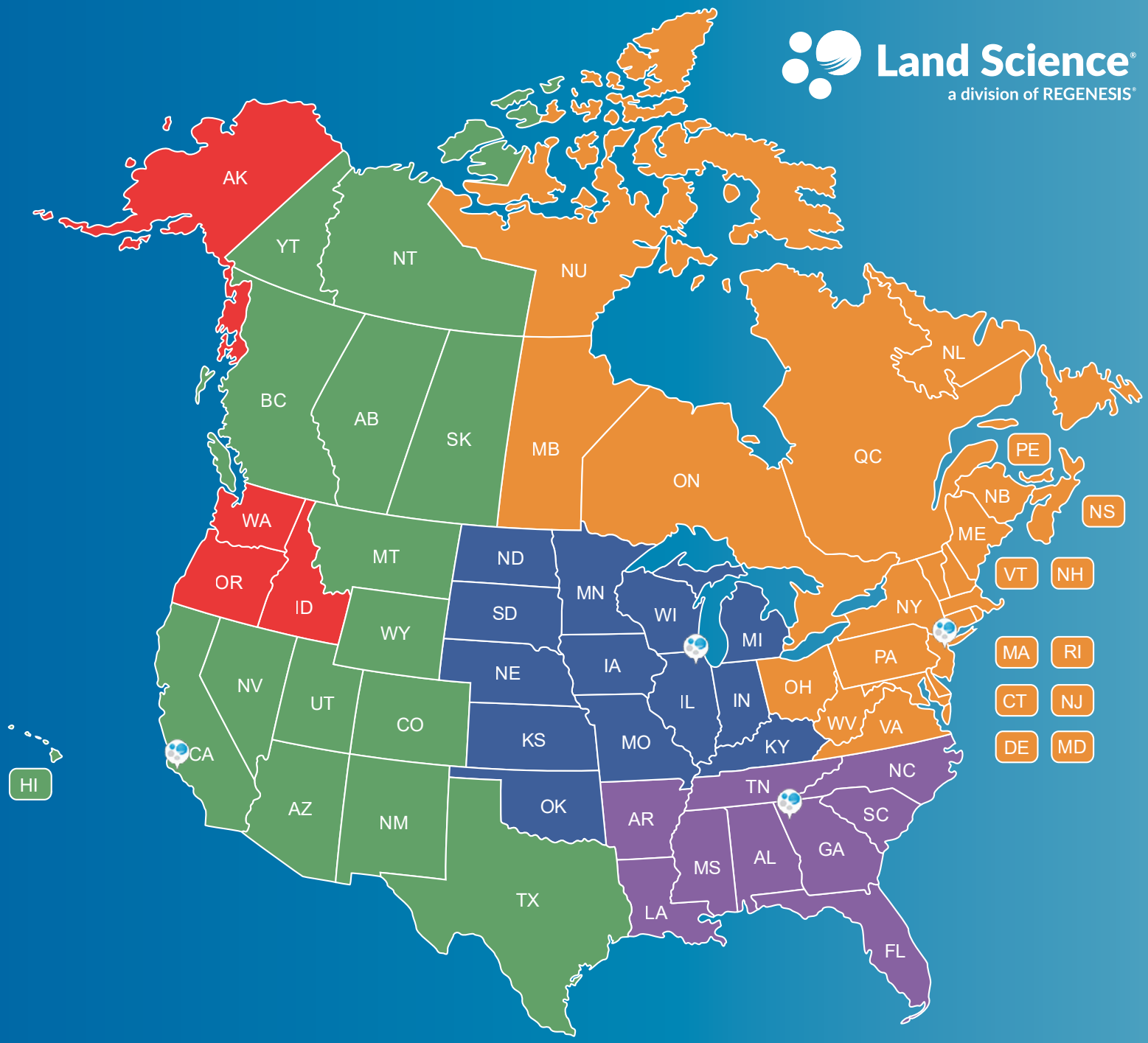

We're Ready to Help You
Find the Right Solution for Your Site

Global Headquarters

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Get Started Today

To recieve a custom vapor intrusion solution, please call 949.481.8118 or e-mail info@landsciencetech.com. One of our Technical Solutions Managers will review your project details and provide you with a customized vapor intrusion solution designed to achieve your goals.

Are You Planning a Vapor Intrusion Mitigation Project?

Contact us today for a free estimate.

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