GREAT AMERICAN INSURANCE GROUP
Environmental

Geosyntec consultants
Geosyntec Consultants of Michigan, Inc.

Environmental and Toxic Torts-Claims Management of Emerging Environmental Issues

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The claims scenarios in this presentation are provided to illustrate possible exposures faced by your clients. The facts of any situation which may actually arise, and the terms, conditions, exclusions, and limitations in any policy in effect at that time, are unique. Thus, no representation is made that any specific insurance coverage applies to the scenarios in this presentation.

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Introduction / Overview

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AGENDA

I: Emerging Contaminants:

PFAS & 1,4-dioxane

II: New Rules: Vapor Intrusion

III: Intersection

IV: Environmental Insurance

V: Environmental Insurance and Emerging Issues

VI: Risk Management

VII: Underwriting Considerations

VIII: Claims Scenarios

IX: Closing and Questions

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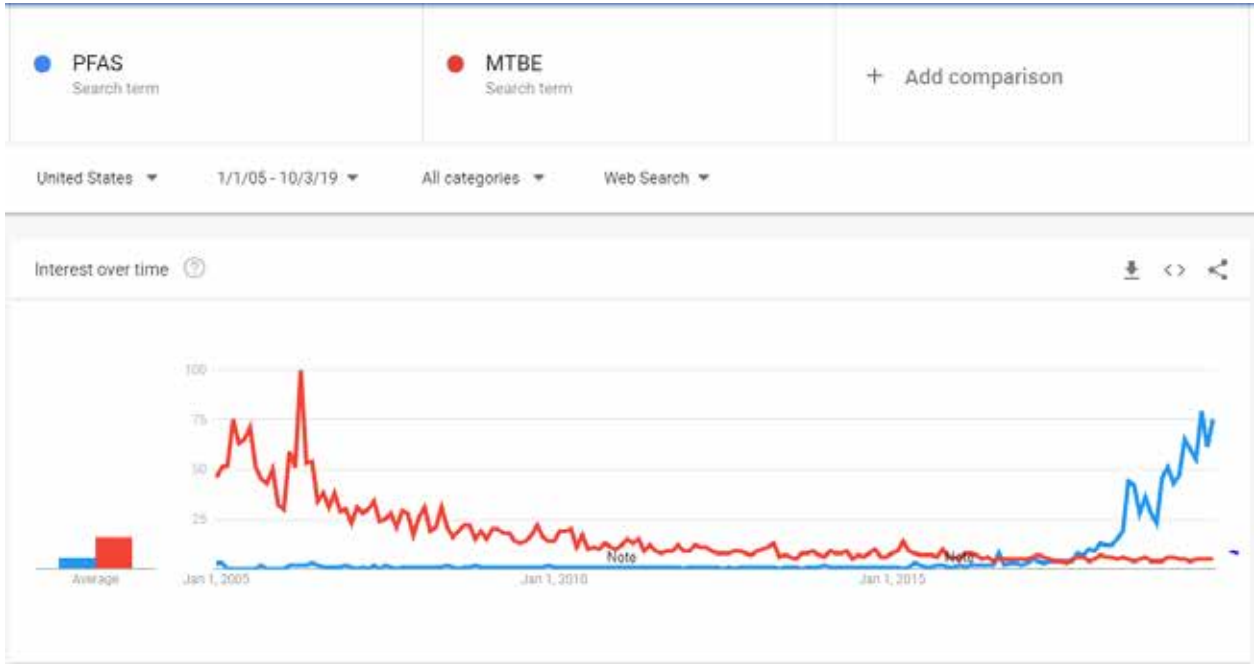
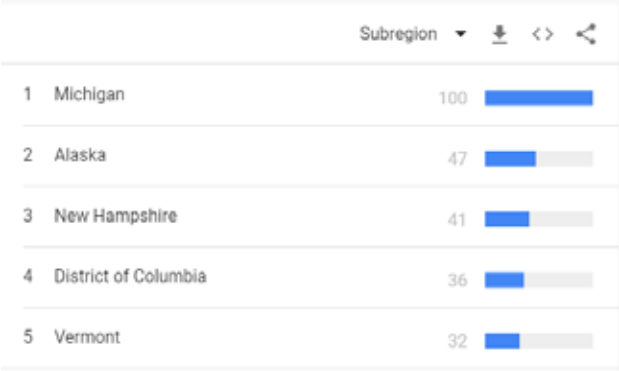
Emerging Contaminants

Section I

GOOGLE USERS AWARENESS OF PFAS





Graphic Source: Google as of 10/03/2019

AWARENESS OF PFAS IN TAP WATER

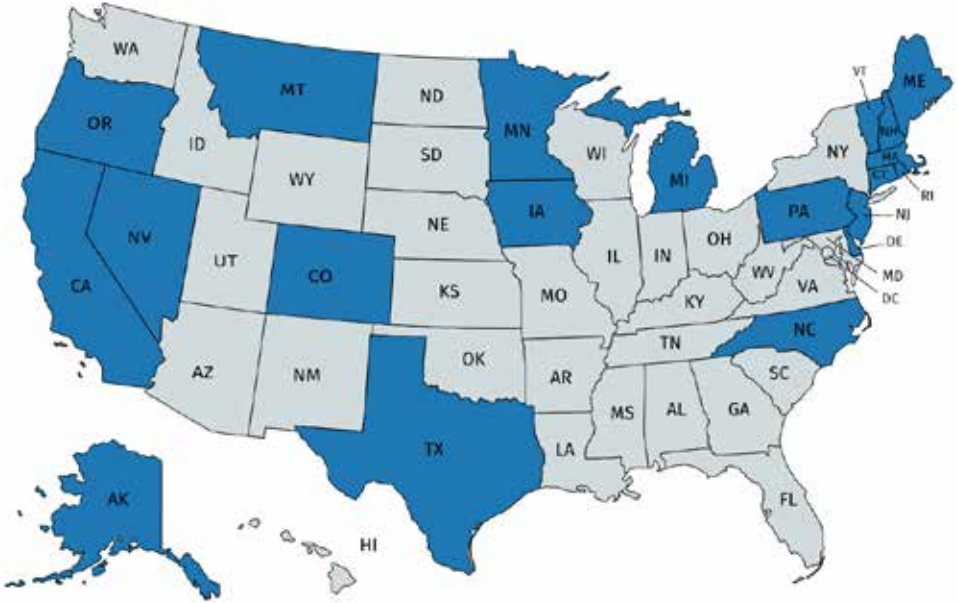
Graphic Source: EWG.org; https://www.ewg.org/research/update-mapping-expanding-pfas-crisis
Northeastern student Cole Alder conducted research to update known contamination sites. Soren Rundquist, EWG's director of spatial analysis, created the interactive map.

FEDERAL REGULATORY DRIVERS FOR PFAS

- May 2012: UCMR 3 includes six PFAS compounds
- May 2016: EPA issues lifetime health advisories for PFOA + PFOS at 70 parts per trillion
- February 2019: EPA releases a PFAS Action Plan
- July 2019: House Passes National Defense Authorization Act for FY 2020

STATE REGULATORY DRIVERS FOR PFAS

20 States have PFAS Screening Levels or Guidance (ITRC, August 2019)



- **AK**
- CA
- CO
- CT
- DE
- IA
- ME
- MA
- **MI**
- MN
- MT
- NV
- NH
- NJ
- NC
- **OR**
- PA
- RI
- TX
- VT

Source: itrcweb.org; https://pfas-1.itrcweb.org/fact-sheets/

QUICKLY DEVELOPING TECHNOLOGIES

September 2019 - biodegradation study published

Environmental Science & Technology

Article

Cite This: Environ. Sci. Technol. 2019, 53, 11410−11419

pubs.acs.org/est

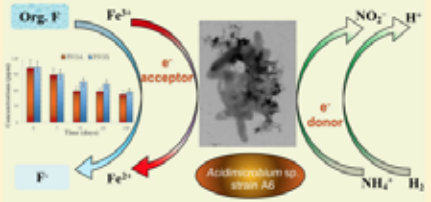
Defluorination of Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonate (PFOS) by *Acidimicrobium* sp. Strain A6

Shan Huang and Peter R. Jaffé*

Department of Civil and Environmental Engineering, Princeton University, Princeton, New Jersey 08544, United States

Supporting Information

ABSTRACT: Incubations with pure and enrichment cultures of *Acidimicrobium* sp. strain A6 (A6), an autotroph that oxidizes ammonium to nitrite while reducing ferric iron, were conducted in the presence of PFOA or PFOS at 0.1 mg/L and 100 mg/L. Buildup of fluoride, shorter-chain perfluorinated products, and acetate was observed, as well as a decrease in Fe(III) reduced per ammonium oxidized. Incubations with hydrogen as a sole electron donor also resulted in the defluorination of these PFAS. Removal of up to 60% of PFOA and PFOS was observed during 100 day incubations, while total fluorine (organic plus fluoride) remained constant throughout the incubations. To determine if PFOA/PFOS or some of their degradation products were metabolized, and since no organic carbon source except these PFAS was added, dissolved organic carbon (DOC) was tracked. At concentrations of 100 mg/L, PFOA/PFOS were the main contributors to DOC, which remained constant during the pure A6 culture incubations. Whereas in the A6 enrichment culture, DOC decreased slightly with time, indicating that as defluorination of PFOS/PFOA occurred, some of the products were being metabolized by heterotrophs present in this culture. Results show that A6 can defluorinate PFOA/PFOS while reducing iron, using ammonium or hydrogen as the electron donor.



QUICKLY DEVELOPING TECHNOLOGIES

June 2019 - EPA announces $2.3 Million for small businesses to develop environmental technologies

- Anfiro, Inc: *Block Copolymer Membranes*
- Brisea Group, Inc: *Microwave-assisted Membrane Filtration*
- Faraday Technology Inc: *Electrochemical Extraction and Remediation*
- Claros Technologies Inc: *Sorbent Technology for Simultaneous Removal and Degradation*
- Oxbyel Technologies, Inc: *Electrochemical mineralization*
- BioLargo, Inc: *Aqueous Electrostatic Concentrator*

QUICKLY DEVELOPING TECHNOLOGIES

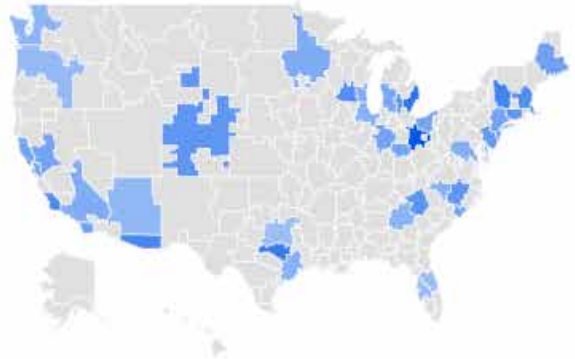
See talk by Geosyntec's Elisabeth Hawley 8:40-9:25 on Friday

GOOGLE TRENDS FOR 1,4-DIOXANE

See talk by Barr's Sara Ramsden at 3:30 – Regionwide Interest Track

Interest by subregion

Metro

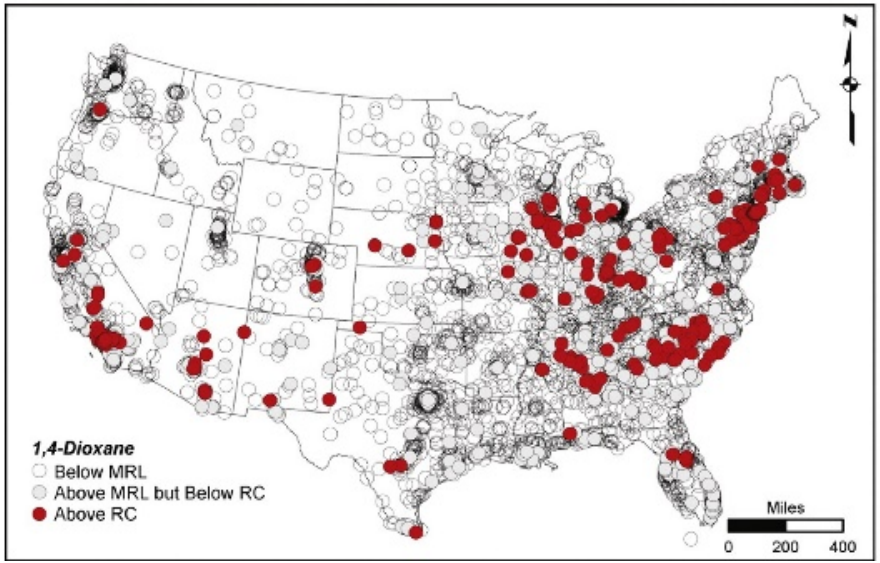


1	Columbus OH	100
2	Detroit MI	75
3	Waco-Temple-Bryan TX	69
4	Albany-Schenectady-Troy NY	61
5	Tucson (Sierra Vista) AZ	60

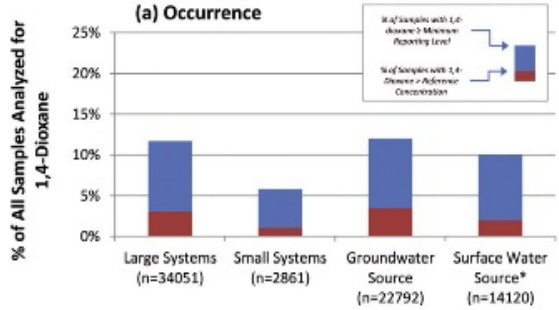
Showing 1-5 of 38 metros

1,4-DIOXANE IN DRINKING WATER

1,4-Dioxane Occurrence in 4864 Public Water Systems Included in UCMR3



1,4-Dioxane detected in 21% of public water systems but detection rates declined over time



Exposure not solely related to groundwater-based conceptual model for 1,4-dioxane releases

New Rules: Vapor Intrusion

Section II

VAPOR INTRUSION

Google Interest by Subregion for Vapor Intrusion

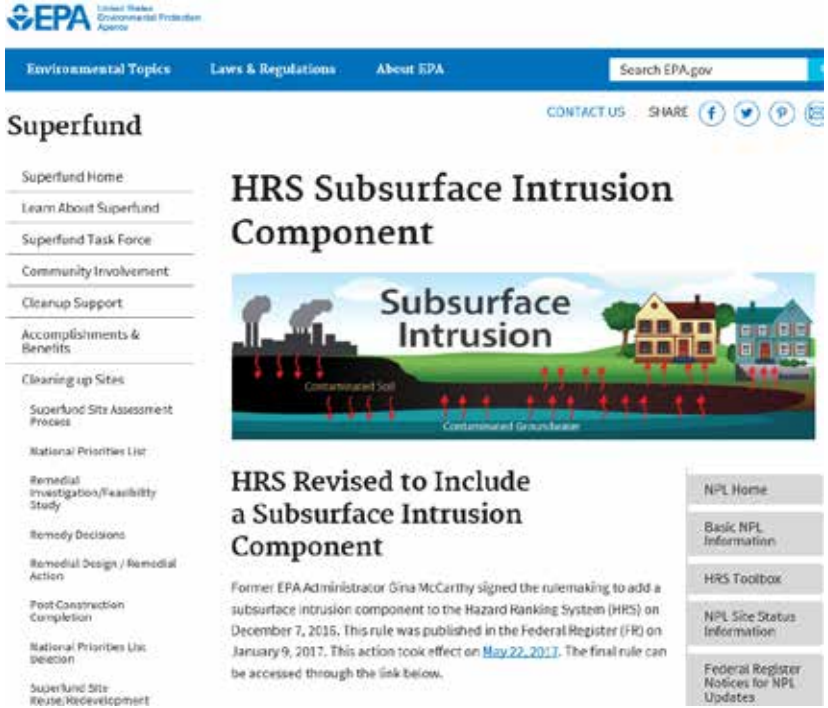
Interest by subregion

Metro

1	Minneapolis-St. Paul MN	100
2	Philadelphia PA	100
3	Detroit MI	81
4	Boston MA-Manchester NH	78
5	New York NY	61

VAPOR INTRUSION

Evolving Scientific Understanding of TCE Risk on the National Level



- 2011: USEPA updates IRIS Toxicity Assessment for trichloroethylene (TCE)
- US EPA guidance – tiered response levels
- 2017: Subsurface intrusion added to Hazard Ranking System

VAPOR INTRUSION

State and regional guidance with accelerated TCE response times

Short-term exposure screening levels for TCE

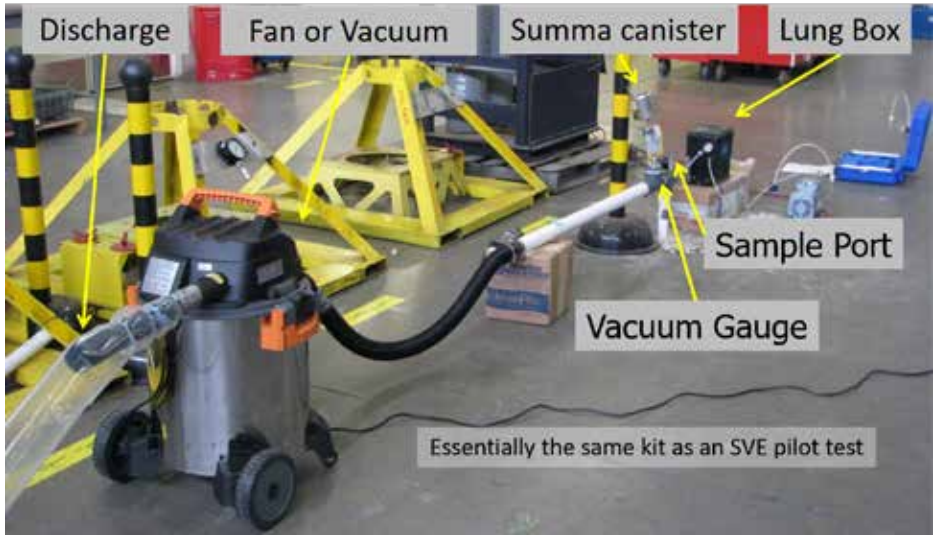
- 11 states
  - AK, CA, CO, CT, KS, MA, MI, MN, NH, NJ, NY, OH
- U.S. EPA Regions 3, 4, 7, 9 & 10
- Geosyntec tracks the changing regulatory framework for vapor intrusion – check out our newsletter!

https://www.geosyntec.com/contaminated-sites-remediation/contaminated-media-investigations-and-assessments/vapor-intrusion

VAPOR INTRUSION

Developing Methodologies See Demos on Thursday from 10:40-12:00

High Volume Sampling



Building Pressure Cycling

Intersection

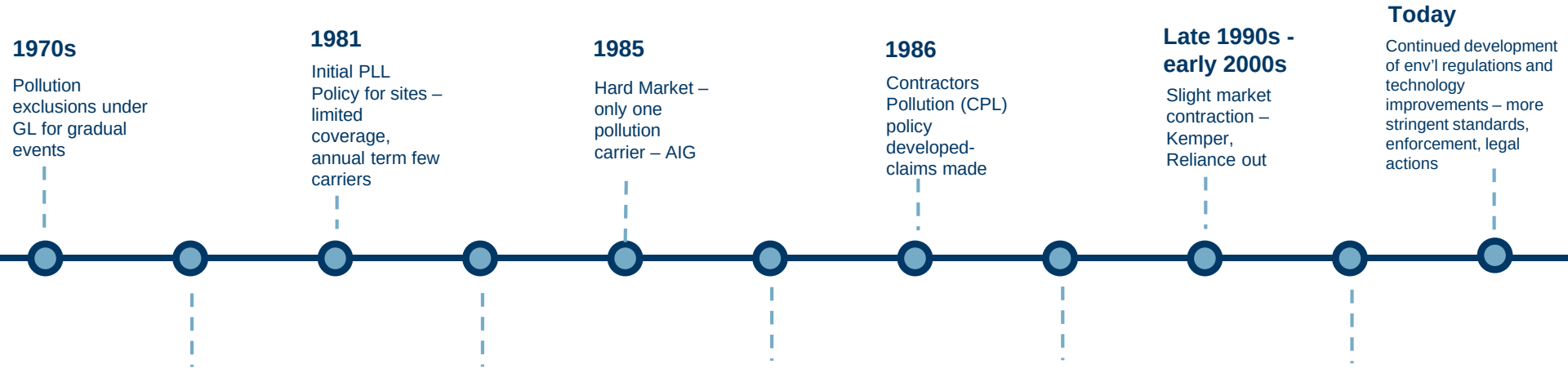
Section III

Environmental Insurance

Section IV

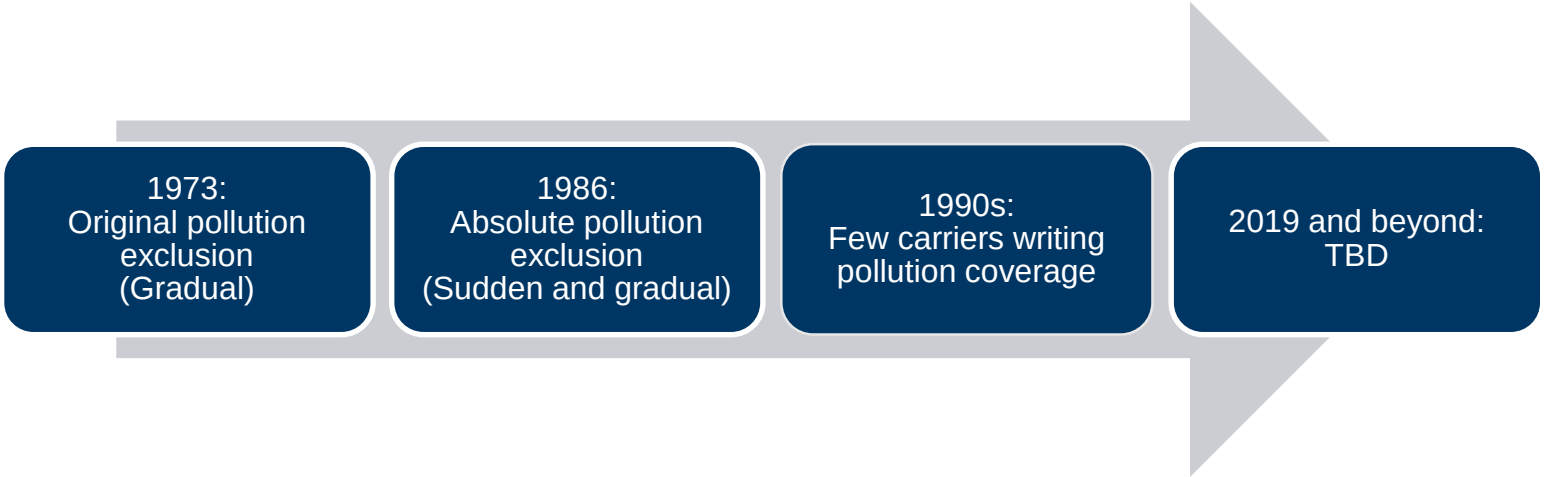
BRIEF HISTORY OF ENVIRONMENTAL INSURANCE

37 Years of Evolution within Environmental Insurance



KEY LEGISLATION

There is an over-reliance on liability / property insurances when it comes to pollution. Too many policy holders assume that the pollution coverage in general liability (GL) policies provides sufficient protection when in fact GL is silent on pollution.



ENVIRONMENTAL LIABILITY MARKET TODAY

INDUSTRY OVERVIEW

- While environmental issues may be more infrequent, when they do occur, they are often massive, expensive and complex.
- Within essentially every industry, there is a pollution exposure – resulting in environmental insurance becoming a $4.5 billion (and growing) industry.
- Standard business general liability policies provide little coverage for pollution damage.
- Market is currently in a state of change; Coverage is much broader today.
- Landlords, attorneys and lenders increasingly requiring coverage (e.g. lease agreements, transactions, loan requirements).
- Carrier stability, commitment and personnel experience need to be considered.

GREAT AMERICAN ENVIRONMENTAL DIVISION

Expertise and experience making a difference

We recognize the need for an exclusive focus on effective management of environmental risks that could threaten the financial security of the businesses we serve.

What Sets Us Apart

- Group of insurance professionals who are experts in underwriting, risk management and claims resolution, we work as a team committed to service excellence
- Great American's financial strength and stability support resulting in long-term commitment to environmental sector
- "Great American Insurance Company and Great American E&S Insurance Company are rated "A+" (Superior) by A.M. Best. Rating affirmed September 11, 2019. Great American Insurance Company is proud to have been rated "A" or better by A.M. Best for more than 100 consecutive years.
- Entrepreneurial culture
- Comprehensive portfolio of customized products that address the exposures unique to this sector
- Manuscript policy forms offered as well as admitted paper via deregulation and large risk exception; Paper approved in all 50 states on E&S basis
- Streamlined process as all underwriting authority is exclusively within the Environmental Division
- In-house claims handling unit
- Coverage for pollution conditions excess of indemnities as well as for "credit risk" liabilities such as closure/post-closure and lender liability policies
- Supported by a national network of consultants and remediation contractors able to respond 24/7/365 to emergency situations
- Underwriting capacity is $50 million per loss/$100 million policy aggregate

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Environmental Insurance and Emerging Issues

Section V

EMERGING ISSUES

Per- and polyfluoroalkyl substances (PFAS)

What is it?

- A family of chemicals used in firefighting foam, non-stick coatings, cleaning products, textiles, food packaging, carpeting and other consumer products
- Exposure has been linked to developmental issues in children, thyroid problems, certain cancers, and other ill health effects.
- They don't break down readily in water and can accumulate in the body.

Where is it being found?

Airports

Manufacturing Facilities

Landfills

Wastewater Treatment Plants

Anywhere firefighting foams have been used or stored

REGULATION

Steady increase in regulatory involvement and investigation

Late May 2019

New Jersey Department of Environmental Protection issues an advisory

For a site that received final RAO with land use restrictions prior to March 13, 2019, PFAS use will need to be evaluated by the LSRP at the next two year certification, and if there is the potential for PFAS presence, additional sampling and investigation may be required.

July 12, 2019

The House passes a major defense spending bill that included important amendments requiring the DOD and the EPA to monitor and clean up PFAS.

The package of amendments, added to the National Defense Authorization Act for FY 2020 will:

- Quickly phase out military use in firefighting foam.
- End the use in military food packaging.
- Expand water quality monitoring for PFAS.
- Ensure proper incineration of military PFAS wastes.
- Accelerate PFAS clean-ups at military facilities.
- Provide an additional $5 million for a PFAS study by the Agency for Toxic Substances and Disease Registry.
- Designate PFAS as “hazardous substances” under CERCLA, the Superfund law.
- Require the Government Accountability Office to study Defense Department cleanup efforts.

July 31, 2019

Gov. Gavin Newsom (California) signed a bill, which gives the State Water Resources Control Board the power to order multiple water districts to test for PFAS.

The bill also requires water suppliers to notify customers of PFAS detections.

Water systems serving an estimated 3.5 million people in California have detected PFAS above federal health advisory levels.

REGULATION

New Jersey Department of Environmental Protection Advisory

Sites with Open Cases

Need to be evaluated for PFAS use and investigated (sampled) if PFAS use was likely.

The interim specific ground water quality standard for each of these contaminants is 0.01 micrograms per liter (µg/L) or 10 parts per trillion (ppt)

Sites with Unrestricted Use Final Remediation Document

(prior to the publication of the Interim Specific Groundwater Quality Standards for PFOA and PFOA on March 13, 2019)

No further evaluation is required at this time.

Sites with Limited Restricted Use or Restricted Use Final Remediation Document

(prior to March 13, 2019 at which PFOA or PFOS is a contaminant of concern)

Evaluation must be performed prior to and reported in the next biennial protectiveness certification.

For a site that received final RAO with land use restrictions prior to March 13, 2019, **PFAS use will need to be evaluated by the LSRP** at the next two year certification, and if there is the potential for PFAS presence, **additional sampling and investigation may be required**.

EMERGING TREND: “AMAZON EFFECT”

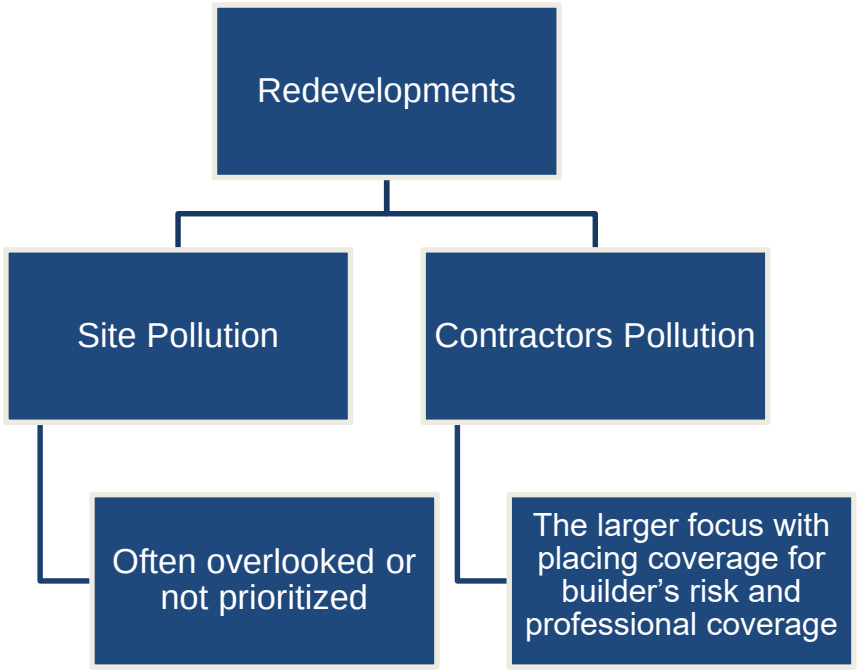
Online Retail Implications

“Amazon Effect”

- With e-commerce increasingly becoming the preferred method for retail shopping, many retail properties are being **renovated and repurposed to alternative uses** to maximize returns, such as residential, hospitality or entertainment.
- Often, many of these **renovations will expand or alter their current footprint** to meet the proposed future uses which may result in unforeseen environmental exposures.
  - Increased development for warehouse and distribution/logistics
- Potentially **effect REIT portfolio values and acquisition/divestiture rates**

EMERGING TREND

Redevelopment Risks Still Dominating Submission Flows



What is driving this trend?

- Economy
- Availability
- Ease of access to money

REDEVELOPMENT SUBMISSIONS

Underwriting Benefits and Challenges

Benefits of Environmentally-Mature Redevelopment Sites	Challenges of Smaller Redevelopment Sites
• More significant environmental history (industrial, manufacturing, etc.) • Significant regulatory oversight • Relevant and recent environmental reports	• Lack of Sufficient Information for underwriting exposures (to be encountered during soil excavation) • No information is present but the insured has been told, (or heard from industry colleagues), that certain coverages are commonplace • Failure to make the connection of what information was available in order to secure more comprehensive coverage

"Just because it wasn't sampled for, doesn't mean it's not there"

Phase II Reports often evaluate whether or not a site slatted for redevelopment has been impacted by the identified RECs

- In many instances, these reports fail to adequately address the potential exposures associated with disposal of soil or fill material as it relates to the acceptance of that material at various disposal facilities.
- Increased costs associated with disposal of asbestos and PCB contaminated material

Risk Management

Section VI

RISK MANAGEMENT

Due Diligence

- Phase I / ESAs / PAs
- Property Condition Assessments
- Environmental Databases
- Other Public Information

Risk Mitigation

Why/When insurance is purchased?

Indemnity Provisions

Data Quality

Budgeting (Known vs Unknown)

Underwriting Considerations

Section VII

PFAS chemicals are ubiquitous in the environment, and their frequent study countrywide will continue to highlight their notoriety.

PFAS Standards Rising

Tougher PFAS standards could force U.S. drinking water suppliers to spend billions of dollars to remove the chemicals from water supplies.

- Could require users (past and present) of PFAS chemicals to pay for environmental remediation and potentially personal injury damages.

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UNDERWRITING APPROACH

Review of current environmental reports

Any sites with an operational history indicative of potential PFAS use receive extra scrutiny.

If site has been investigated and is clean or has no history of PFAS usage – no coverage restrictions related to PFAS

If site has been investigated and has confirmed PFAS or history suggestive of PFAS but no investigation – coverage restrictions likely will apply

UNDERWRITING APPROACH

Exposures

- Unanticipated development exposures
- Re-opener exposures due to change in uses from commercial to residential
- Mold encountered during renovations
- Bigger exposure on longer term policies

Approach

- Evaluate tenant leases (time remaining), and review financials or rent rolls
- Familiarity with surrounding developments, change in neighborhood which may support continued retail needs.
- Tailor material change in-use exclusions to address future alterations with option to re-evaluate planned change in use to offer expanded coverage at that time.

Opportunity: Increase in warehousing and logistics center submissions and associated truck terminals in support of e-commerce business

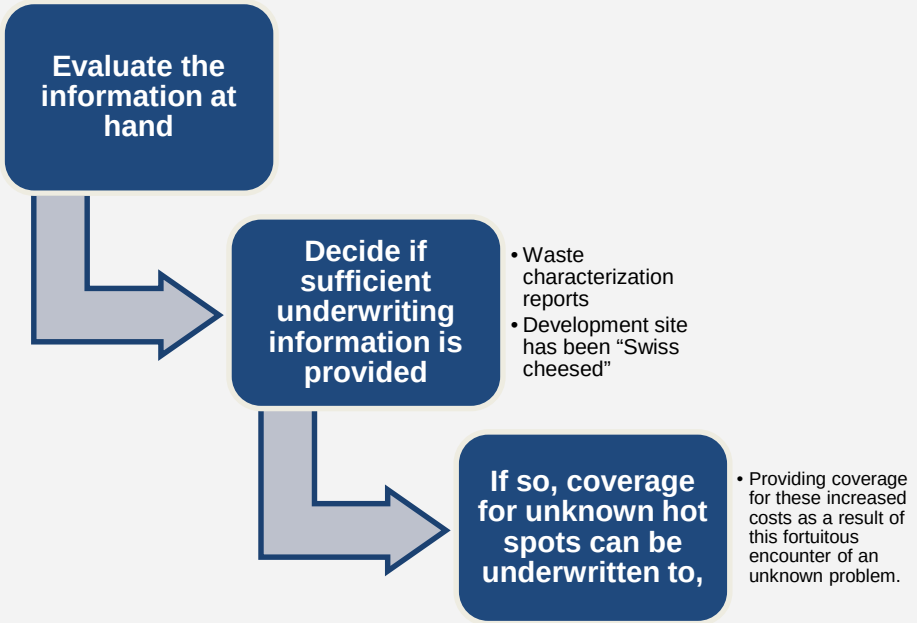
UNDERWRITING APPROACH

A probable cost of doing business includes:

When soil or fill materials is anticipated to be encountered during development and expected to be removed from the site.

The market has changed – Development costs are now expected to picked up by the insured, not supplemented by the carrier.

- While it's rare to get information needed upfront, carriers understand that it is likely going to be part of the development process later on.
- If new information becomes available, underwriting approaches for redevelopment sites can be amended mid-term.



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Claims Scenarios

Section VIII

The claim scenarios in this presentation are provided to illustrate the variety of environmental exposures faced by your clients. The facts of any situation which may actually arise and the teams, conditions, exclusions, and limitations in any policy in effect at that time are unique. Thus, no representation is made that any specific insurance coverage applies to the above claim scenarios.

CLAIMS SCENARIO

Property Owner / Industrial Unit – Chlorinated Solvents

A small powder coating company which leased an industrial unit from a large property owner went into liquidation.

Contractors employed to refurbish the unit discovered large, poorly maintained process tanks leaking chlorinated solvents.

Furthermore, chemicals escaped through cracks in the concrete floor, causing extensive soil and groundwater contamination to the surrounding property.

The contamination had the potential to impact sensitive water resources. As a result of the former tenant going into liquidation, the property owner became liable for the resulting environmental exposures.

Investigations were undertaken and extensive risk modeling prepared to determine the potential impacts on local water resources.

Significant expense was incurred to remove the source area, impacted soils and to install a groundwater treatment system.

CLAIMS SCENARIO

Hospital Legionella

Legionella was discovered in the water supply of a major metropolitan hospital.

An entire wing of the hospital needed to be vacated and patients removed while the water system went through treatment for the legionella.

In addition to the remediation costs, several patients sued the hospital claiming bodily injury from exposure to legionella.

The claim scenarios in this presentation are provided to illustrate the variety of environmental exposures faced by your clients. The facts of any situation which may actually arise and the teams, conditions, exclusions, and limitations in any policy in effect at that time are unique. Thus, no representation is made that any specific insurance coverage applies to the above claim scenarios.

CLAIMS SCENARIO

Developer – Contaminated Soil

New construction commenced on a previously undeveloped parcel of land.

During excavation and dewatering activities, contaminated groundwater was discovered.

The developer was required by State regulatory authorities to collect, test and treat groundwater pumped out during the excavation process.

Contaminated soils were also discovered at the site.

Construction delays and additional expenses totaling over one million dollars were incurred by the developer.

It was eventually determined that the contamination had migrated from a nearby manufacturing facility that had gone into bankruptcy several years prior to the development period.

Closing and Questions

Section IX

CONCLUSION

Claims Coverage & Management

When it comes to a claim for an emerging issue, many of the same best practices apply: report early, document the damage, seek consent and work with the claims adjuster.

A few of the issues that may require unique approaches include:

Finding the right experts to support the claim. Not all consultants, attorneys, or contractors are skilled or knowledgeable in investigating or remediating an environmental claim that involves an emerging issue or contaminant.

Understanding and negotiating an end point. If there is no established government standard for an emerging contaminant, it can be more difficult to know “how far to go” in cleanup.

Managing public perception if there are potential off-site impacts or third party concerns.

Keeping up-to-date with emerging regulations, guidance and standards.

QUESTIONS?

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