



**COMMERCIAL LINES
SEMINAR** February 27-March 1, 2013
Renaissance Chicago Hotel • Chicago, Ill.

Emerging Issue – Hydraulic Fracturing

Thursday, February 28, 2013, 8:30 a.m.

Charlie Kingdollar
Vice President
Gen Re
Stamford, Conn.

Charlie Kingdollar, vice president and emerging issues officer at General Reinsurance, leads the company's emerging issues unit contained in the Treaty Marketing division of Gen Re. Charlie has been with the group for 29 years and is responsible for tracking and analyzing developments that create new or changing exposures, assessing their potential impact on the property/casualty insurance industry.

He regularly consults with clients on the impact of emerging issues and the underwriting actions insurers may wish to implement to address these exposures. Charlie reports these legal, scientific, and societal developments in a variety of Gen Re publications, including "Hazardous Times," "Insurance Issues," "Topics," "Casualty Matters," and "Pollution Rulings & Maps."

Session Description:

Hydraulic fracturing is primarily seen as an issue in personal lines, but are there implications for commercial lines? In this session, Gen Re's emerging issues expert, Charlie Kingdollar, will explore what hydraulic fracturing entails and how the exposure has changed. He will discuss the exposures arising from these operations and whether existing policy language adequately addresses these exposures.

Charlie will also discuss the increase in the number of natural gas, oil, and injection disposal wells cited on leased land and whether home owners, family farmers, and commercial farmers face liability arising from these operations.

Top Three Session Ideas

Tools or tips you learned from this session and can apply back at the office.



1. _____

2. _____

3. _____

Emerging Issue – Hydraulic Fracturing

Session Outline

Overview

U.S. Shale Deposits

Natural Gas Drilling

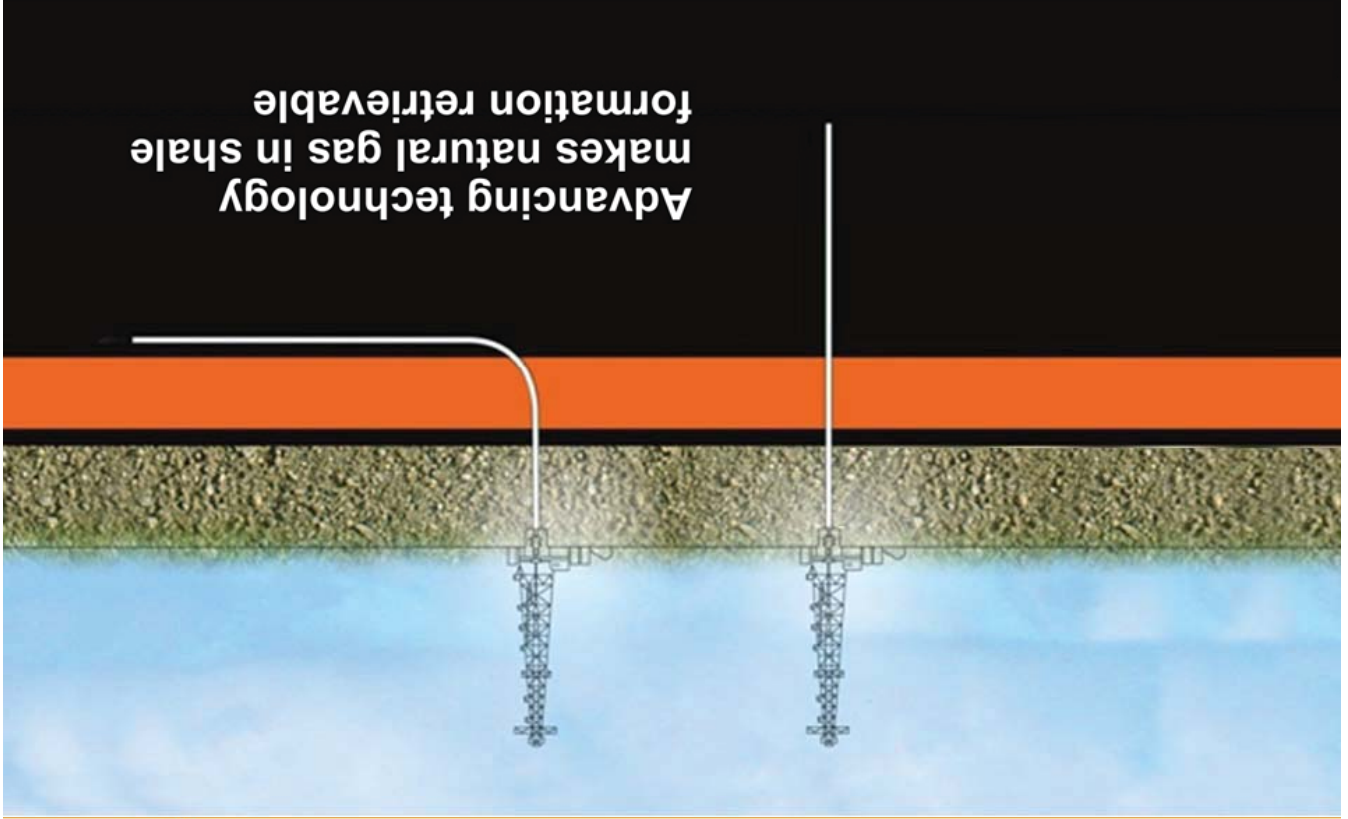
- Fracking
- Producing Wells
- Wells Drilled
- Oil and Gas Enforcement Staff
- Things Can and Do Go Wrong
 - Allegations
 - Earthquakes
 - Studies
 - Pennsylvania
- Litigation Has Begun
 - Great Falls, Montana
 - Dimock Township, Pennsylvania
 - Pennsylvania
- Considerations
 - Setback Restrictions
 - Individual State Laws
 - Individual State Environmental Laws
- Coverage Issues
 - Business or Business Pursuits Exclusions
 - Definition of “Business” and Exceptions
 - Farmowners’ Policies
 - Applicability of Pollution Exclusions in Personal Lines Policies
- It’s Not Just Horizontal Natural Gas Wells

Deep Injection Disposal Wells

Conclusions

Questions & Answers

Natural Gas Drilling



Advancing technology
makes natural gas in shale
formation retrievable

Natural Gas Drilling



Injecting millions of gallons of water
per well with:

- Proppants (sand, resin or ceramic beads)
- 50,000–1,000,000 gallons of fracking fluids

Fracking



Fracking

- Historically gas well operators did not have to disclose ingredients of fracking fluid
- Exempt from Federal Safe Drinking Water Act as long as fluid does not contain diesel fuel
- Seven states now require some disclosure
- Regs contain loopholes—states allow drillers not to disclose “proprietary” of “confidential” ingredients



Fracking

- Congressional Report found 750 chemicals used in fracking fluids:
- Benzene, toluene and zylene
- Methanol
- Biocides
- Ethylene glycol
- Hydrochloric acid
- Diesel fuel



Fracking

Hazardous chemicals in fracking fluids used in one Colorado well in 2013 included:

- Naphthalene
- Trimethylbenzene
- Potassium chloride
- Tergitol NP-4
- Benzene
- Ethylbenzene
- n-Hexane



Producing Wells – 2010

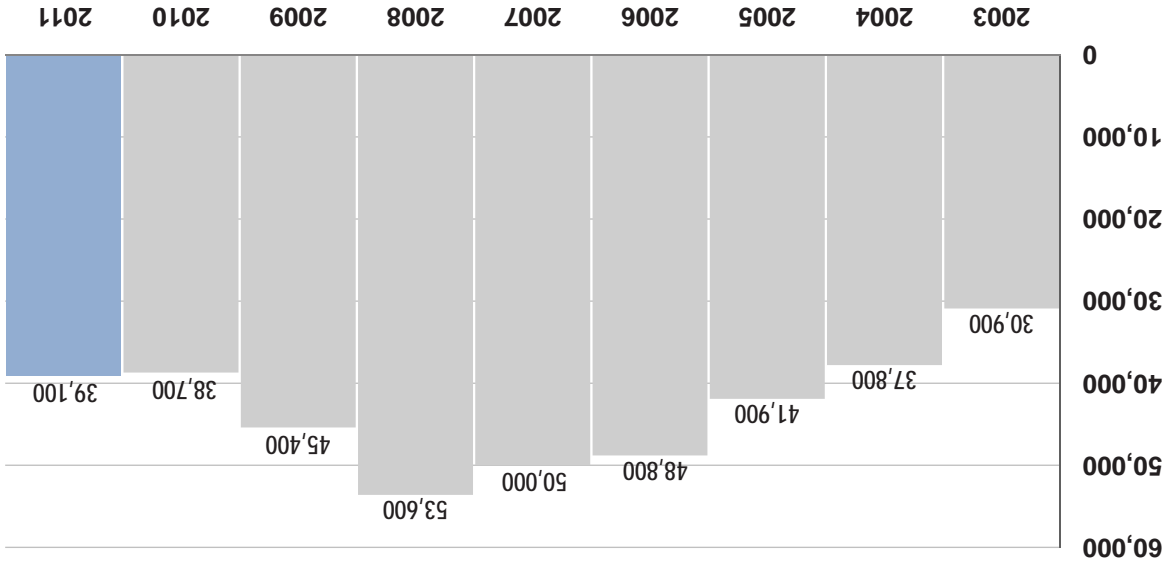
South Central		Rocky Mountain		Marcellus Shale	
TX	100,966	CO	30,101	KY	14,632
OK	41,238	MT	6,477	NY	6,157
AR	8,388	NM	32,302	OH	46,717
KS	25,758	WY	26,180	PA	54,347
LA	21,235	Total	95,060	VA	7,903
Total	197,585			WV	56,813
				Total	186,569

Total in U.S. – 514,637

Natural Gas Drilling

Nationwide Natural Gas – Wells Drilled

2003 – 2011

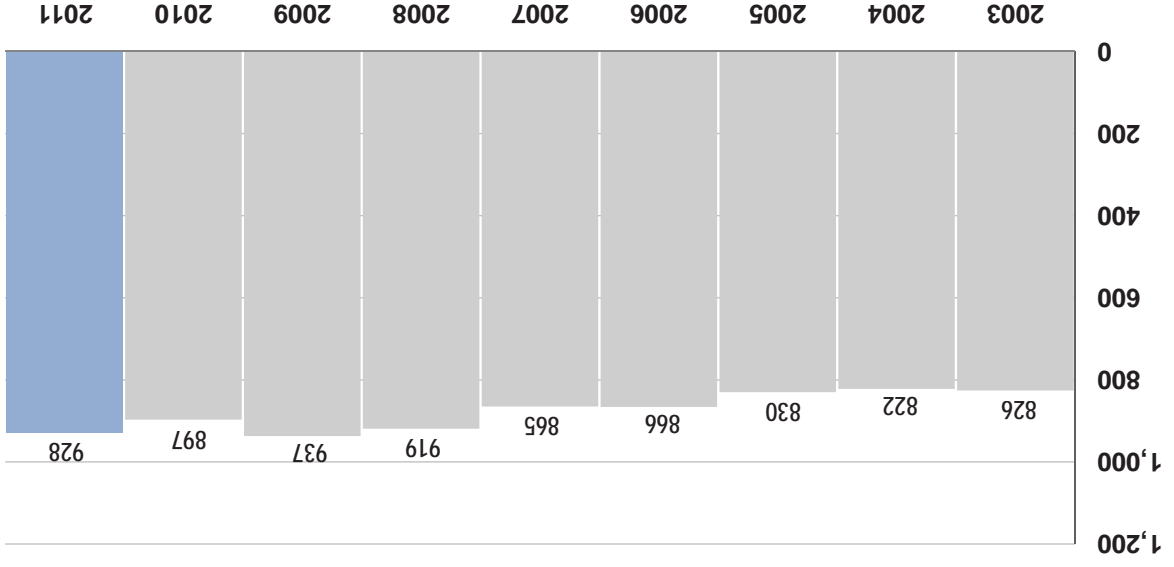


Source: ProPublica

Natural Gas Drilling

Nationwide Natural Gas – Oil and Gas Enforcement Staff

2003 – 2011



Source: ProPublica

Natural Gas Drilling



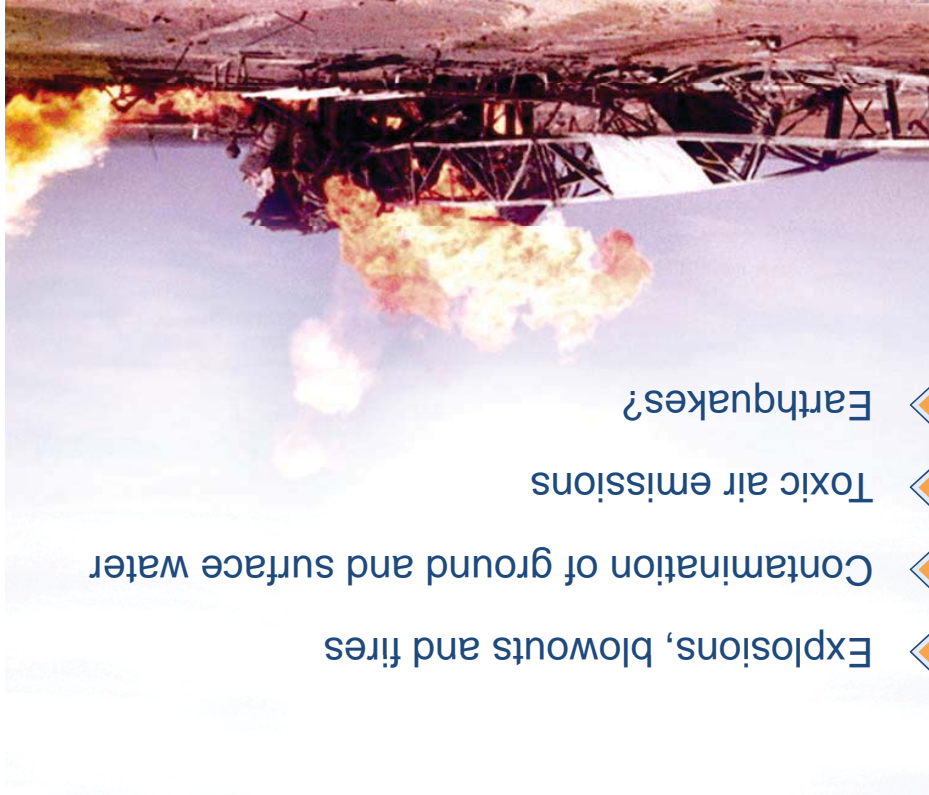
Things Can and
Do Go Wrong

Explosions, blowouts and fires

Contamination of ground and surface water

Toxic air emissions

Earthquakes?



Natural Gas Drilling



Things Can and
Do Go Wrong

Allegations

Texas: Illness in people and livestock

Louisiana: Livestock deaths

Colorado: Methane contaminated dozens of water wells

Illinois: Methane migrated over 7 miles underground

– several times what industry experts

believed possible

Wyoming: Benzene discovered throughout 28 mile

long aquifer

Colorado: Contamination of drinking water

Wyoming: EPA found 14 “contaminants of concern” in
11 wells

Natural Gas Drilling



Earthquakes

UK – fracking caused earthquakes – magnitude <3

USGS

- 6 fold increase in earthquakes in the nation's mid-section from late 20th century through last year
- Increase has gotten steeper since 2009
- Region experienced about 21 earthquakes per year from 1970–2000
- 29 in 2001–2008
- 50 in 2009, 87 in 2010 and 134 in 2011
- AR, TX, WV – magnitude under 3.1 – over 700 EQs in AR over 6 months in 2010 – several over a 3.0 magnitude.
- University of Texas – Dozens of earthquakes magnitude 3 or less over a 2 year period
- Deep injection disposal wells vs. fracking

Things Can and Do Go Wrong

- 2011 – Duke University Study
 - Methane contamination in 85% of drinking water wells tests
 - Methane levels average 17x higher in wells within 1 kilometer of fracking sites
- 2011 – University of Texas
 - Preliminary findings: no direct link between fracking and groundwater contamination – subsequently withdrawn
- 2011 – EPA
 - Fracking chemicals contaminate Wyoming aquifer
- 2012 – University of Buffalo
 - Regulations make fracking safe – subsequently withdrawn
- 2012 – Independent Hydrologist
 - Fracking “clear” cause of Wyoming aquifer contaminator

Natural Gas Drilling



2012 – UK/Norway Study

- Fracking caused vertical fractures through layers of rock up to nearly 2,000 feet from the source

2012 – U.S. Study by an independent hydrogeologist

- Fracking can contaminate water supplies
- Natural fractures exacerbated by fracturing
- Force from fracking can take a year to ease resulting in the continued push of chemicals from the drill site
- Can take up to 6 years before natural balance of pressure is restored

Natural Gas Drilling



2011 – CDC

- Rise in breast cancer rates in 6 Texas counties with the most natural gas drilling activities

2012 – University of Massachusetts

- Shale gas drilling “strongly implicated” in serious health problems

2012 – University of Colorado

- Air emissions from fracking may contribute to health problems for those living up to ½ mile

Natural Gas Drilling



Things Can and
Do Go Wrong
In Pennsylvania

- DEP PA: Hundreds of spills over past 5 years by 92 companies
- DEP PA: Driller contaminated 14 water wells in Susquehanna County
- PA: Hundreds of millions of gallons of Briney/possibly radioactive Wastewater dumped into state rivers

Marcellus Shale Drillers

1,500 violations in 2-1/2 years

Natural Gas Drilling



Things Can and
Do Go Wrong
In Pennsylvania

- Hundreds of spills, leaks, seeps, overflows and blowouts
- Contaminated surface and ground water
- Contaminants include: manganese, aluminum, barium, sodium, strontium and chloride
- Some chemicals measure 200x safe drinking water levels
- Drinking water wells of 16 families contaminated with methane
- Energy company fined \$1.1M

Natural Gas Drilling

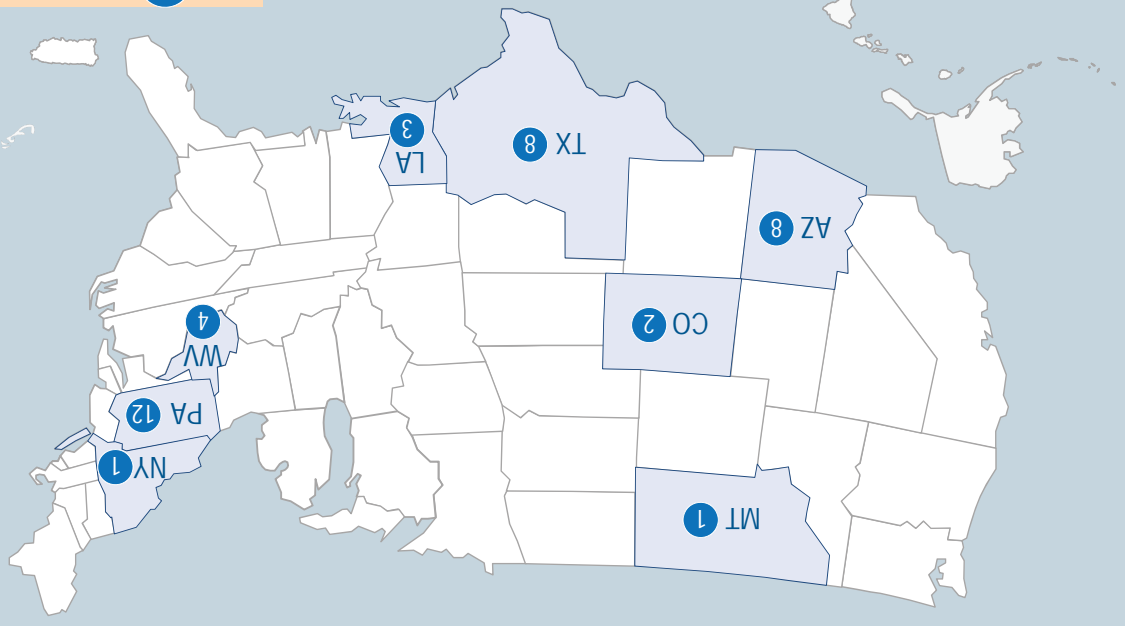
EPA List Of Problems With Range Resources Penn. Gas Wells

02/14/2011	081-20238	78.85 – Inadequate, insufficient, and/or improperly installed cement
02/22/2011	081-20238	78.86 – Failure to report defective, insufficient, or improperly cemented casing w/in 24 hrs or submit plan to correct w/in 30 days
02/07/2012	081-20292	78.86 – Failure to report defective, insufficient, or improperly cemented casing w/in 24 hrs or submit plan to correct w/in 30 days
09/23/2011	081-20313	78.83GRNDWTR – Improper casing to protect fresh groundwater
02/16/2011	081-20385	78.85 – Inadequate, insufficient, and/or improperly installed cement
02/22/2011	081-20385	78.86 – Failure to report defective, insufficient, or improperly cemented casing w/in 24 hrs or submit plan to correct w/in 30 days
12/02/2011	081-20387	78.86 – Failure to report defective, insufficient, or improperly cemented casing w/in 24 hrs or submit plan to correct w/in 30 days
11/23/2011	081-20480	78.86 – Failure to report defective, insufficient, or improperly cemented casing w/in 24 hrs or submit plan to correct w/in 30 days
11/23/2011	081-20481	78.86 – Failure to report defective, insufficient, or improperly cemented casing w/in 24 hrs or submit plan to correct w/in 30 days
11/23/2011	081-20482	78.86 – Failure to report defective, insufficient, or improperly cemented casing w/in 24 hrs or submit plan to correct w/in 30 days
11/23/2011	081-20483	78.86 – Failure to report defective, insufficient, or improperly cemented casing w/in 24 hrs or submit plan to correct w/in 30 days
11/23/2011	081-20484	78.86 – Failure to report defective, insufficient, or improperly cemented casing w/in 24 hrs or submit plan to correct w/in 30 days
11/23/2011	081-20485	78.86 – Failure to report defective, insufficient, or improperly cemented casing w/in 24 hrs or submit plan to correct w/in 30 days
09/23/2011	081-20489	78.83GRNDWTR – Improper casing to protect fresh groundwater
10/18/2011	081-20596	78.86 – Failure to report defective, insufficient, or improperly cemented casing w/in 24 hrs or submit plan to correct w/in 30 days



Natural Gas Drilling

Litigation Has Begun



+12 Class Actions

Natural Gas Drilling



Litigation Has Begun Great Falls, Montana

- ▶ One Family
- Livestock pond contaminated with drilling waste water
- Jury Awards: \$437,000

Natural Gas Drilling



Litigation Has Begun Dimock Township, Pennsylvania

- ▶ Litigation filed on behalf of 19 families
- Alleging 8 poorly sealed wells caused Explosions, drinking water contamination— exposure to heavy metals
- Diminution of property values
- Illnesses alleged include
 - Neurological disorders
 - Gastrointestinal disorders
 - Dermatological problems
- Settlement – \$4.1M



Litigation Has Begun
Pennsylvania

- Litigation filed on behalf of 3 families
- Alleging drinking water contamination
- Settlement – \$1.6M

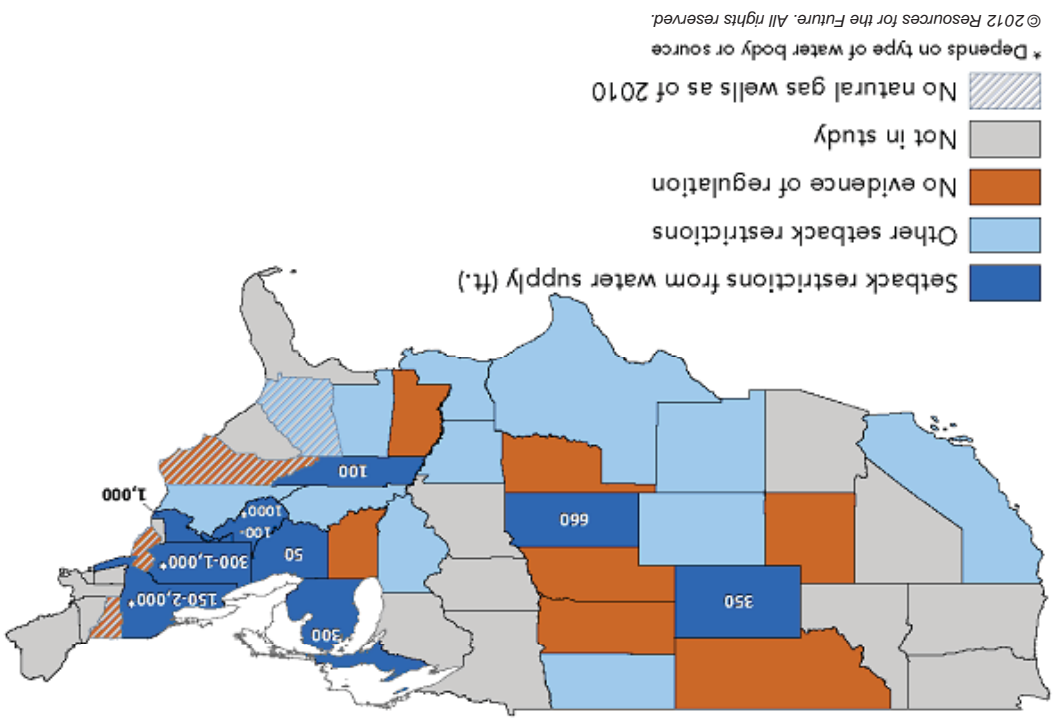


Considerations

- The following maps address state regulations for:
 - Setback distances from buildings;
 - Setback distances from water sources;
 - On-site fluid storage options; and
 - Pit liner requirements.

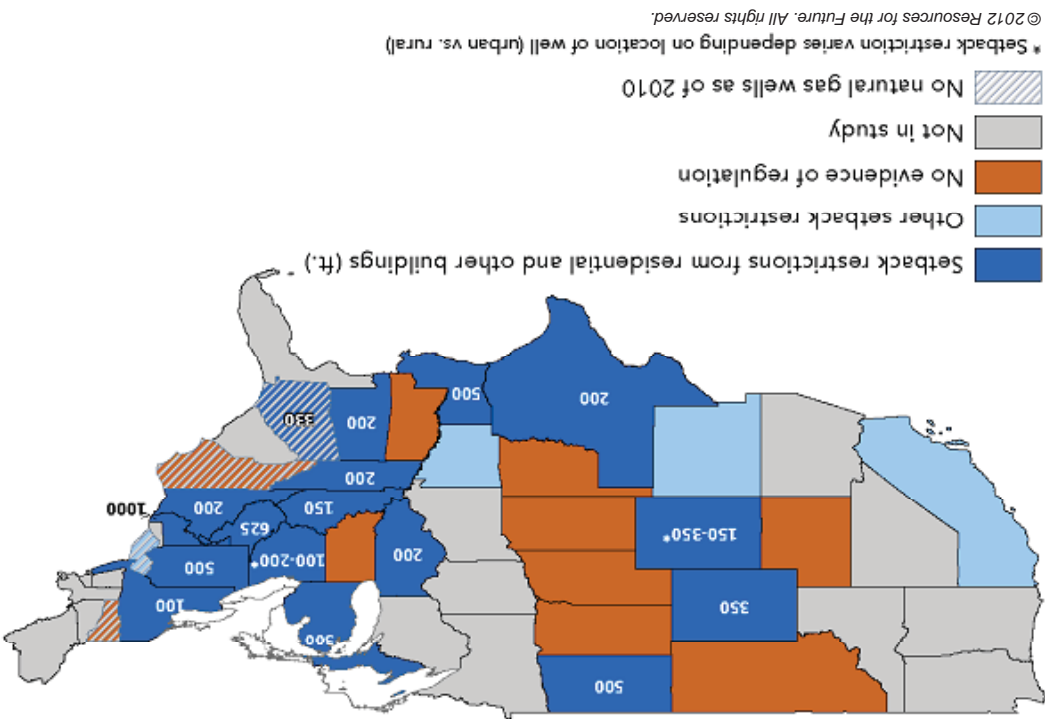
Natural Gas Drilling

Setback Restrictions from Water Sources



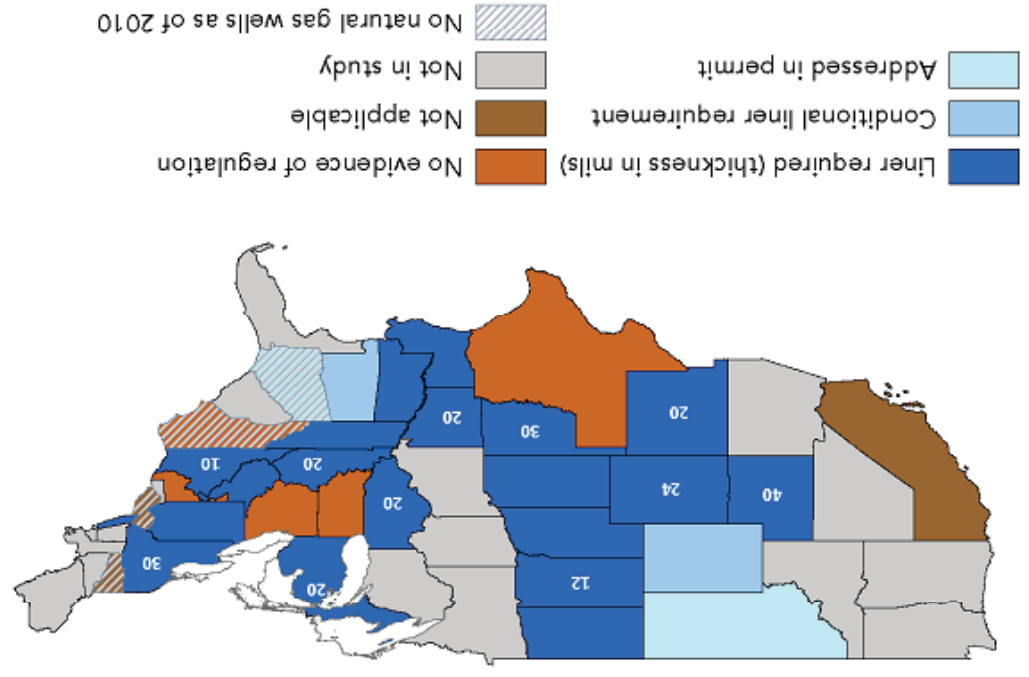
Natural Gas Drilling

Setback Restrictions from Buildings



Natural Gas Drilling

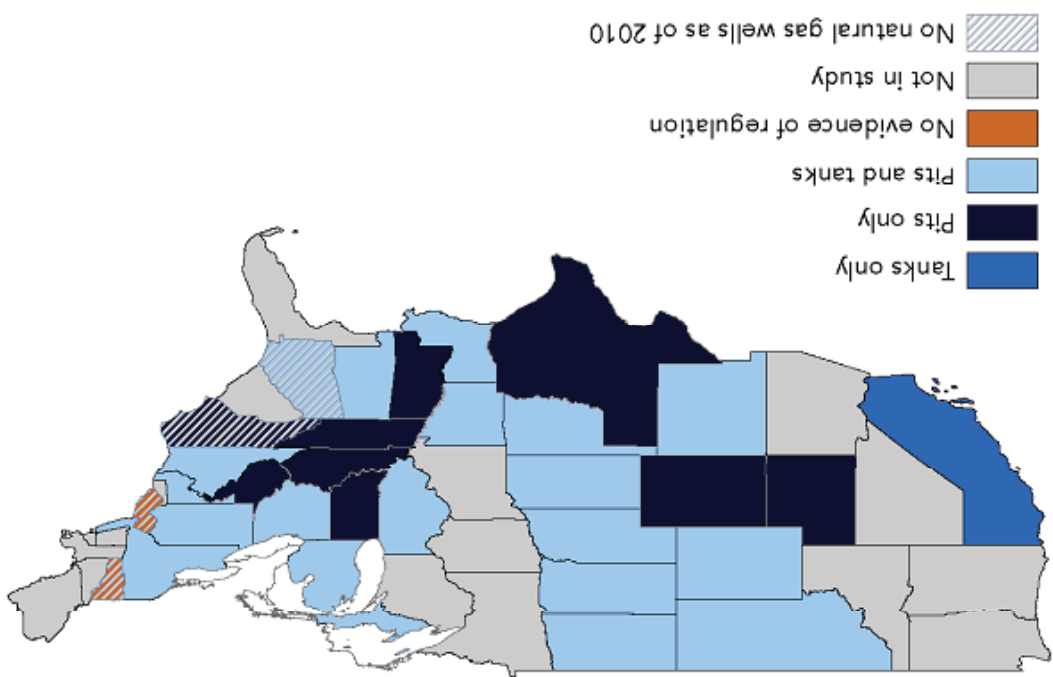
Pit Liner Requirements



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Natural Gas Drilling

Fluid Storage Options



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Natural Gas Drilling



Natural Gas Drilling



Considerations

*Individual
State Laws*

Mineral Rights Laws

Surface owners may not own mineral rights

Surface owners may have little or no say in
drilling operations

Liability?



Considerations

Individual State Environmental Laws

- Strict liability including for owners of property on which spill occurred
- A property owner will be liable even if its lessee bears all responsibility for operation of the property under the lease
- Also includes a direct cause of action allowing injured parties to bring suit directly against a liable party's insurer
- NY App Ct interpreting Navigation Law, property owner would not be permitted "to evaluate liability by contractually limiting ... control of the premises;"

NY's Oil Spill Navigation Law Article 12



Considerations

Individual State Laws

- Designated a nonparticipating owner – not liable for actions or conditions associated with drilling
 - MI Designated a full working party – contains no liability exemption
 - PA Proposed legislation – designated as an "operator" – contains no liability exemption
 - TX Those forced pooled do not get remuneration
- Forced Pooling Laws May Assign Liability



Coverage Issues

- HOs coverage has become largely automated
- Few carriers still send out annual renewal apps
- No application questions regarding well exposures



Coverage Issues

- Business or Business Pursuits Exclusions
- Current forms—"a" business
- "Conducted from an insured's locations"
- "Whether or not the 'business' is owned or operated by an insured"



Coverage Issues

- Appellate Courts: GA, MS and NC
 - Exclusion applies only to the insured's principle business
- Appellate Courts: CT, OK, TN and TX upheld exclusions based upon two-pronged test:
 - Continuity of operations, and
 - The insured's profit **motive**

Business or Business Pursuits Exclusions

- What if some courts rule that these exclusions are limited to "an insured's" business
- Definition of "business" and the listed exceptions will come into play



Coverage Issues

- What if some courts rule that these exclusions are limited to "an insured's" business
- Definition of "business" and the listed exceptions will come into play



Coverage Issues

- Any other activity engaged in for money or other compensations, except the following:
 - (1) One or more activities... for which no insured receives more than \$2,000 in total compensation for the 12 months before the beginning of the policy period...

Definition of "Business" and Exceptions



Coverage Issues

Farmowners' Policies

- ISO's FOs—contains business pursuits exclusion:
 - Excl. reads—"a business engaged in by an insured"
 - Def. includes the phrase "enterprise or activity"



Coverage Issues

Applicability of Pollution Exclusions in Personal Lines Policies

- Standard homeowners' policy contains a pollution exclusion under Section 1 which should bar first party claims
- Most do not contain an exclusion under Section II
- Farmers' policies generally contain a pollution exclusion but language varies
- Personal Umbrella policies generally do not contain a pollution exclusion



It's Not Just Horizontal Natural Gas Wells

- Fracking now being used to extract oil from "unconventional reservoirs"
- Fracking has allowed oil exploration companies to double the number of rigs in the U.S. over 1 year ago
- Some 90% of all oil and gas wells – including vertical wells, are fracked

Deep Injection Disposal Wells



How many on leased land?

- TX has the most with 52,000
- MO has 4,133
- AR has 1,387
- OH has 24,984

Over 150,000 in 32 states

Deep Injection Disposal Wells



What's Put Deep Underground Stays Underground?

- Waste placed in deep injection wells get pushed back towards surface through pressure and small fractures
- Structural failures are routine
- One study: waste moved up 1,400 feet over 23 years
- Known leaks in CA, FL, OK and LA
- Drinking water wells have been contaminated



Conclusions

- Increasing push to lease land over shale beds
- Potential toxic tort and pollution litigation / claims
- Policy language interpretation
- Personal Lines carriers have generally not contemplated the exposure
- Insurers may see requests to modify exclusions to allow some coverage under HOs' and FOs' policies