Water and Air Issues in Utica Shale Development

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Water and Air Issues in Utica Shale Development

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Potential Water Permitting Issues Associated with Development of Utica Shale in Ohio

Armando Benincasa

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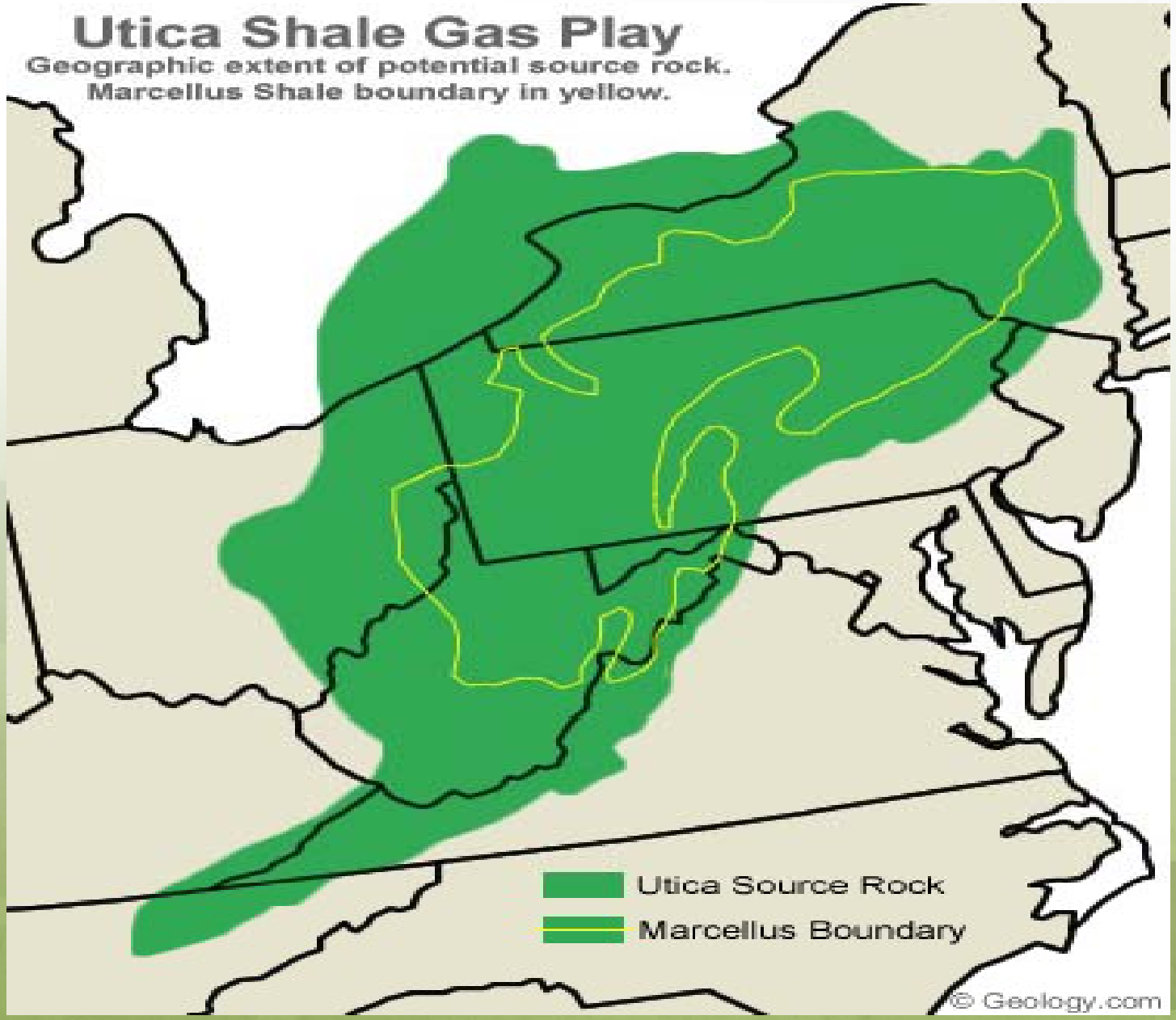
Utica Shale



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Oil and Gas Regulations - Water

Major revisions to rules undertaken in 2005 addressing permitting and construction of wells and disposal wells but do not address water quantity or quality issues related to unconventional gas exploration.

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Conventional vs. Unconventional

- Larger site footprints/Impoundments
- Larger fresh water needs
- Higher volumes of flow back/produced water

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Jurisdiction and Water Issues

- Ohio Department of Natural Resources
- Ohio Environmental Protection Agency

Water Use Concerns

- Impacts to Surface Waters
- Impacts to Groundwater
- The Appalachian Experience

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Water Use in Ohio

- Common Law
- Reasonable Use Doctrine
- Application of Law

Limited Water Use Permitting

- Consumptive uses of more than two million gallons per day averaged over any 30 day period
- Transfer of water in excess of 100,000 gallons per day from Lake Erie and Ohio River basins
- Permitting performed by Ohio DNR

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Registration

Facilities capable of withdrawing more than 100,000 gallons of water per day from either groundwater or surface water sources must register with the Ohio DNR

Water Management Plans

- Adopted in Pennsylvania and SRBC in some form
- Permit addendum and water use tool in West Virginia
- No counterpart yet in Ohio

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Traditional Wastewater Handling

- Land Application
- Transport to Publicly Owned Treatment Works (POTWs)
- Specialty Wastewater Facilities

Wastewater Handling

- Ohio recognizes only one form of oil and gas wastewater handling and disposal explicitly; underground injection
- Other forms of wastewater handling approved on a case-by-case basis by DNR

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UIC Permitting

- Part of SDWA regulatory scheme
- Ohio maintains state approved UIC program

Surface Water Discharge

- Discharges to surface water directly from site not permissible pursuant to federal effluent guideline
- Transport of wastewater to treatment facility for treatment and discharge via surface water discharge regulated by the state

Joint Jurisdiction

- DNR maintains authority regarding the handling and disposal of oil and gas related wastewater in Ohio
- EPA maintains authority regarding direct discharge of treated wastewater to surface waters

NPDES Program

- Surface water discharges are regulated pursuant to the CWA
- Ohio maintains a state approved NPDES program
- Permitting through Ohio EPA
- Disposal options for oil and gas though must also be approved by Ohio DNR

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Consistent With Other States

- Surface water discharges discouraged
- Re-use and recycling
- Underground Injection

Wastewater Controversy

- Cities denied opportunity to treat oil and gas related wastewater to surface waters
- Influx of wastewater for disposal in UIC wells in Ohio
- Fees for disposal raised

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Future Regulation

- Water use – likely review of impacts and assertion of limited jurisdiction by Ohio EPA or DNR
- Water use and water quality
- Protection of human health and the environment

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Future Regulation

- Wastewater handling – surface water discharge permitting will be difficult
- Record keeping
- UIC and continued re-use and recycling of water is critical
- Other options and dollars

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Potential Air Permitting Issues Associated with Development of Utica Shale in Ohio

Kathy Milenkovski

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Table 13: Air Pollutant Releases by Industry Sector (tons/year)

Industry Sector	CO	NO_2	PM10	PT	SO_2	VOC
Metal Mining	4,951	49,252	21,732	9,478	1,202	119,761
Oil and Gas Extraction	**132,747**	**389,686**	**4,576**	**3,441**	**238,872**	**114,601**
Non-Fuel, Non-Metal Mining	31,008	21,660	44,305	16,433	9,183	138,684
Textiles	8,164	33,053	1,819	38,505	26,326	7,113
Lumber and Wood Products	139,175	45,533	30,818	18,461	95,228	74,028
Wood Furniture and Fixtures	3,659	3,267	2,950	3,042	84,036	5,895
Pulp and Paper	584,817	365,901	37,869	535,712	177,937	107,676
Printing	8,847	3,629	539	1,772	88,788	1,291
Inorganic Chemicals	242,834	93,763	6,984	150,971	52,973	34,885
Plastic Resins and Man-made Fibers	15,022	36,424	2,027	65,875	71,416	7,580
Pharmaceuticals	6,389	17,091	1,623	24,506	31,645	4,733
Organic Chemicals	112,999	177,094	13,245	129,144	162,488	17,765
Agricultural Chemicals	12,906	38,102	4,733	14,426	62,848	8,312
Petroleum Refining	299,546	334,795	25,271	592,117	292,167	36,421
Rubber and Plastic	2,463	10,977	3,391	24,366	110,739	6,302
Stone, Clay, Glass and Concrete	92,463	335,290	58,398	290,017	21,092	198,404
Iron and Steel	982,410	158,020	36,973	241,436	67,682	85,608
Metal Castings	115,269	10,435	14,667	4,881	17,301	21,554
Nonferrous Metals	311,733	31,121	12,545	303,599	7,882	23,811
Fabricated Metal Products	7,135	11,729	2,811	17,535	108,228	5,043
Electronics and Computers	27,702	7,223	1,230	8,568	46,444	3,464
Motor Vehicle Assembly	19,700	31,127	3,900	29,766	125,755	6,212
Aerospace	4,261	5,705	890	757	3,705	10,804
Shipbuilding and Repair	109	866	762	2,862	4,345	707
Ground Transportation	153,631	594,672	2,338	9,555	101,775	5,542
Water Transportation	179	476	676	712	3,514	3,775
Air Transportation	1,244	960	133	147	1,815	144
Fossil Fuel Electric Power	399,585	5,661,468	221,787	13,477,367	42,726	719,644
Dry Cleaning	145	781	10	725	7,920	40

What is the Regulated "Source"?

- Oil and Gas Industry "looks" different than traditionally regulated "stationary source"
- Under PSD and Title V, EPA looks to see whether pollutant emitting activities:
  - are located on one or more contiguous or adjacent properties
  - are under common control of same person (or persons under common control)
  - belong to the same major industrial grouping (2-digit SIC code prefix)
- If so, activities may be "aggregated"

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EPA Guidance on Aggregation

- *Wehrum Memo* (2007):
  - Attempted to simplify the 3-factor test by considering the "surface site" occupied by the facilities
  - Withdrawn in 2009 and replaced by *McCarthy Memo*
- *McCarthy Memo* (2009):
  - Notes that "no single determination can serve as adequate justification for how to treat any other source determination"
  - Back to case-by-case determination

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Aggregation Issues

- State Guidance Varies
  - Pennsylvania
    - Permitting authorities should make case-by-case single source determinations consistent with EPA guidance from the body of determinations made over the past two decades
  - Louisiana, Oklahoma, Texas
    - Presumption that oil and gas facilities located within ¼ mile are aggregated

Federal Regulation Under the CAA

- Maximum Achievable Control Technology (MACT)
  - 40 CFR 63 Subpart H – Equipment Leaks
  - 40 CFR 63 Subpart HH – Oil and Natural Gas Production Facilities
  - 40 CFR 63 Subpart HHH – Oil and Natural Gas Transmission and Storage

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Federal Regulation Under the CAA

- National Emission Standard for Hazardous Air Pollutants (NESHAP)
  - 40 CFR 61 Subpart V – National Emission Standards for Equipment Leaks (Fugitive Emission Sources)

Federal Regulation Under the CAA

- New Source Performance Standards (NSPS)
  - 40 CFR 60 Subpart Kb – Standards of Performance for Storage Vessels
  - 40 CFR 60 Subpart KKK – Standards of Performance for Equipment Leaks of VOC from Onshore Natural Gas Processing Plants

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Tighter Ozone National Ambient Air Quality Standards

- 2008: Bush EPA revised Ozone NAAQS to 75 ppb
  - Not consistent with CASAC's recommendation of a primary standard between 60 and 70 ppb
  - Appeals filed
  - EPA asked DC Circuit to stay cases pending Obama administration review
- September 2009: Obama EPA announced it would reconsider standard
- January 2010: EPA proposed new rule with standard between 60 and 70 ppb
- EPA now expects to sign final rule by July 2011

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What Will New Ozone NAAQs Mean?

- Ozone is regulated as VOC and NOx
- New Ozone standard will mean significant areas of NOx and VOC nonattainment
- New "major sources" proposing to locate in those areas will have to undergo nonattainment NSR
- "Major source" levels in nonattainment areas:
  - 100 TPY of nonattainment regulated pollutant (NOx or VOC)
- "Major modification"
  - 40 TPY VOC or NOx

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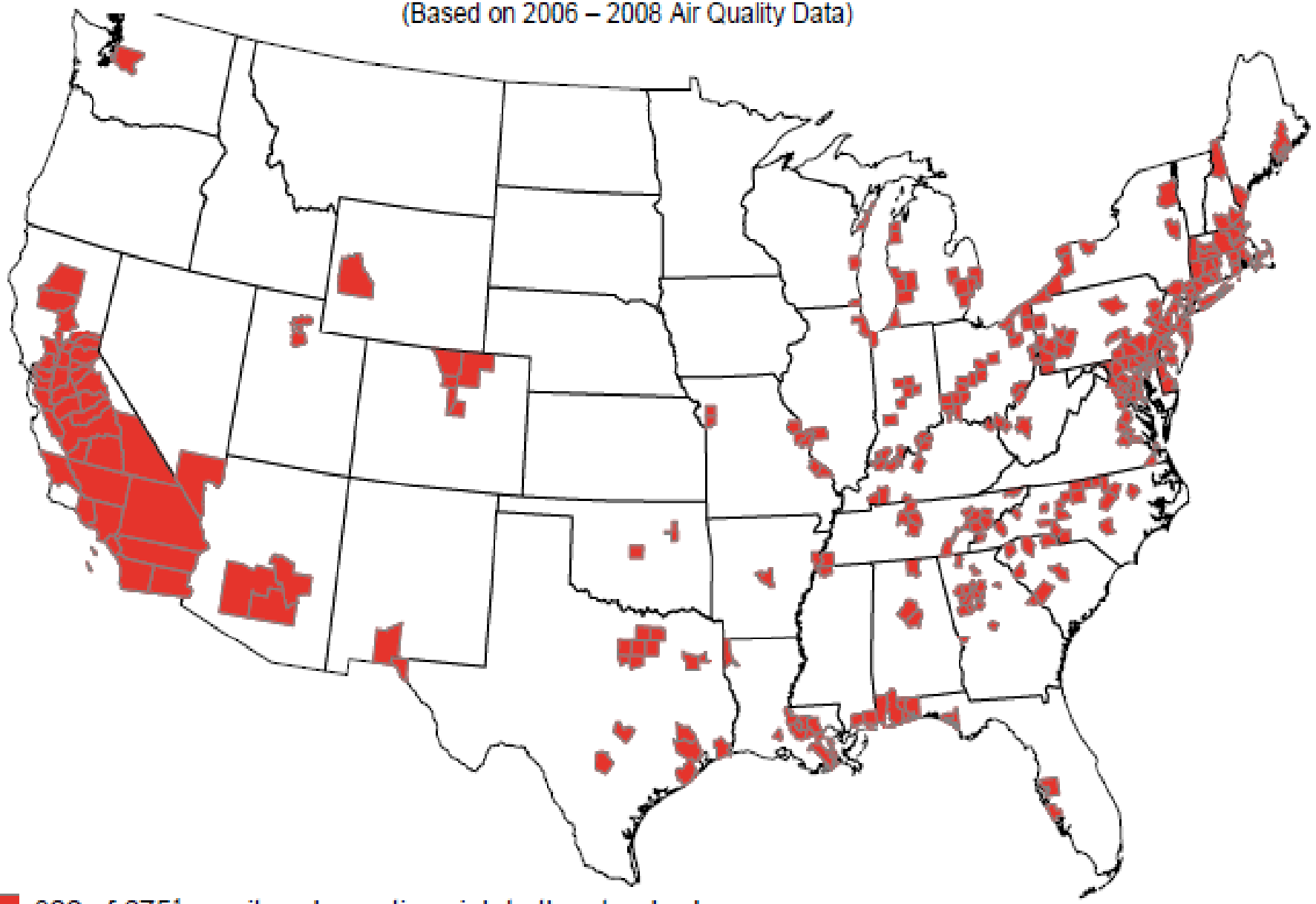
Counties With Monitors Violating the March 2008 Ground-Level Ozone Standards

0.075 parts per million

(Based on 2006 – 2008 Air Quality Data)

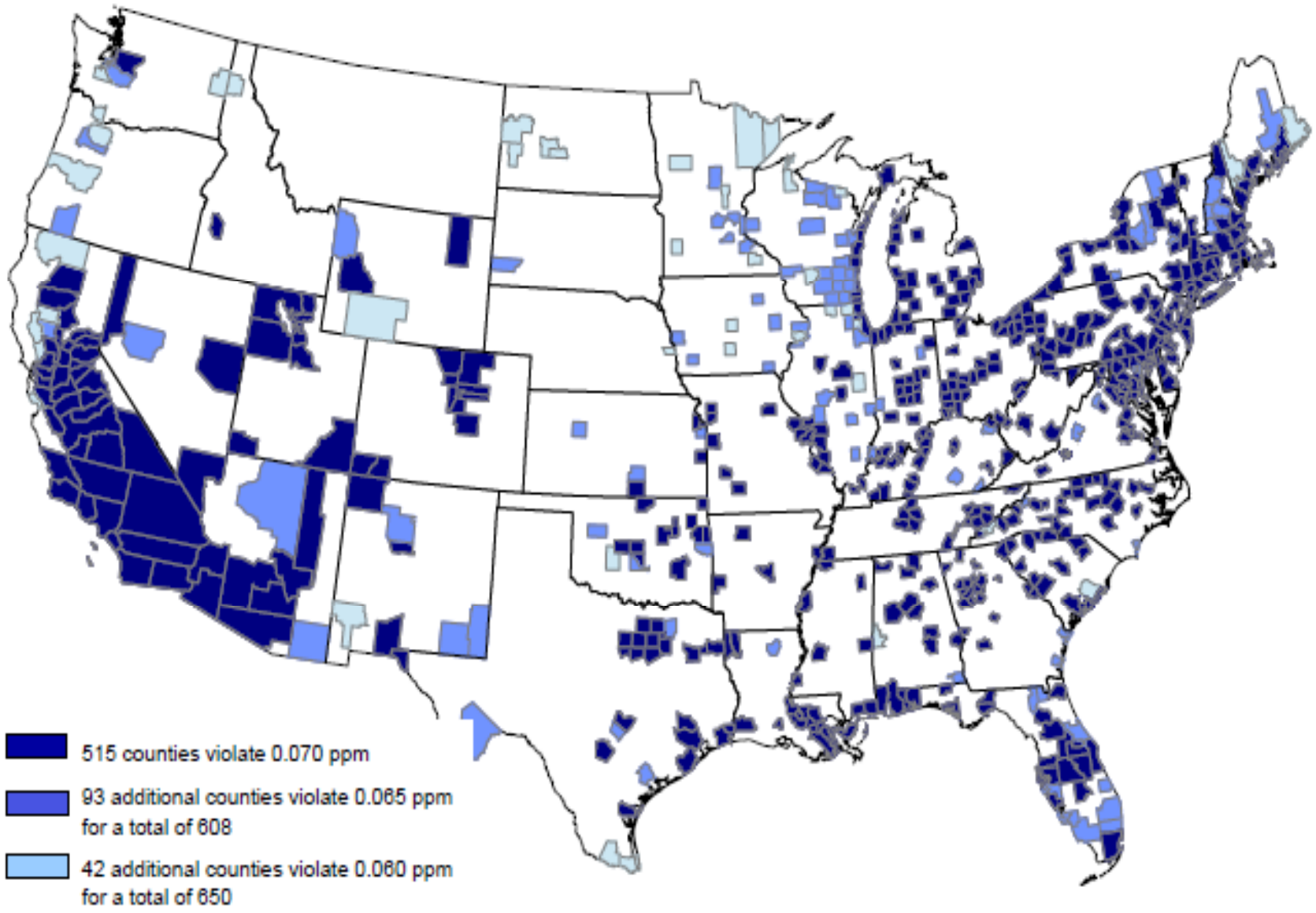


322 of 675[1] monitored counties violate the standard

Counties With Monitors Violating Primary 8-hour Ground-level Ozone Standards
0.060 - 0.070 parts per million

(Based on 2006 – 2008 Air Quality Data)

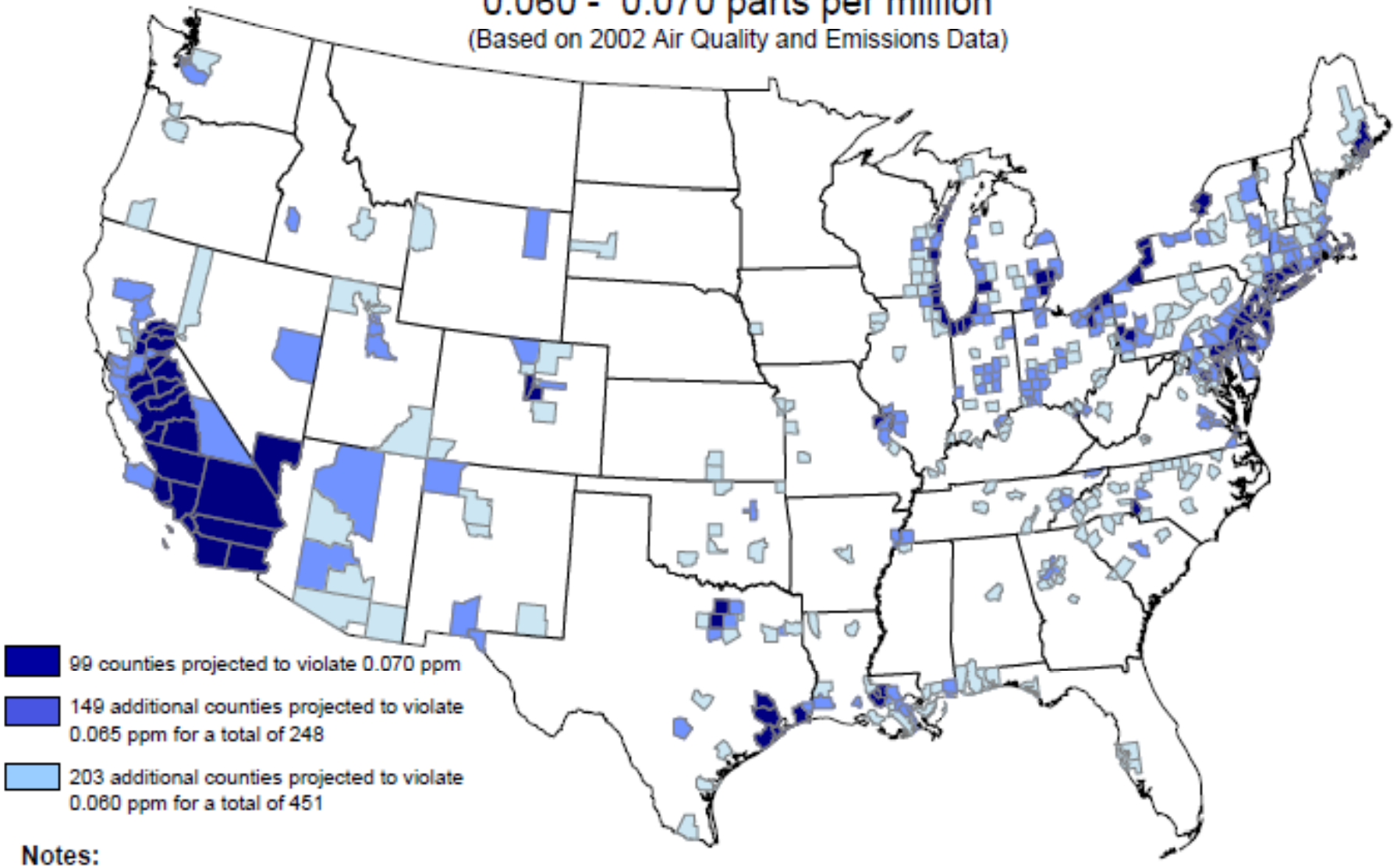
EPA will not designate areas as nonattainment on these data, but likely on 2008 – 2010 data which are expected to show improved air quality.



Counties With Monitors Projected to Violate Primary 8-hour Ground-Level Ozone Standards in 2020

0.060 - 0.070 parts per million

(Based on 2002 Air Quality and Emissions Data)



Notes:

1. The modeled emissions in 2020 reflect the expected emissions reductions from federal programs by 2020 including: the Clean Air Interstate Rule, the Clean Air Mercury Rule, the Clean Air Visibility Rule, the Clean Air Nonroad Diesel Rule, the Light-Duty Vehicle Tier 2 Rule, the Heavy Duty Diesel Rule, the proposed rules for Locomotive and Marine Vessels and for Small Spark-Ignition Engines, and an estimate of State-level mobile and stationary source controls that were projected to be needed to attain pre-existing PM 2.5 and ozone standards.
2. Controls applied are illustrative. States may choose to apply different control strategies for implementation.

New NO_2 NAAQS

- January 22, 2010, EPA strengthened existing NO_2 NAAQS
- New 1-hour NO_2 standard at 100 ppb, with new form: 3-year average of 98th percentile of annual distribute of daily maximum 1-hour average concentrations
- New monitors required
- Attainment designations expected January 2012 based on existing monitors
- Redesignations in 2016 – 2017 based on expanded network of monitors

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New NO_2 NAAQS

- Particular problem for sources with short stacks such as generators
- Modeling suggests that typical emergency generators will exceed standard

Green House Gas (GHG) Emissions

- Now that GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, SF_6) are "regulated air pollutants," new and modified major sources of GHG face PSD permitting
- Existing major source thresholds of 100 or 250 TPY would cripple permitting system due to scale of most GHG emissions
- GHG Tailoring Rule issued May 13, 2010 "tailors" the requirements of PSD and Title V permit programs

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GHG Tailoring Rule

- Step 1 (January 2, 2011 – June 30, 2011)
  - Only sources currently subject to PSD (i.e., PSD triggered for pollutant other than GHG) subject to GHG permitting
    - Only increases of 75,000 TPY or more of total GHG (CO2e) trigger BACT
  - Only sources currently subject to Title V (i.e., "major" for pollutant other than GHG) are subject to Title V permitting for GHG
  - No sources subject to CAA permitting solely due to GHG emissions

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GHG Tailoring Rule

- Step 2 (July 1, 2011 – June 30, 2013)
  - PSD will cover new construction projects that emit 100,000 TPY GHG, even if permitting thresholds for other pollutants are not exceeded
  - PSD is also triggered by modifications that increase GHG emissions by 75,000 TPY or more
  - Title V will apply to sources based on GHG emissions of 100,000 TPY or greater, even if not major for any other pollutant

GHG Tailoring Rule

- Without Tailoring Rule, EPA estimates
  - 82,000 PSD permits
  - 6 million Title V permits
- With Tailoring Rule, EPA estimates
  - 900 PSD permits
  - 550 Title V permits
- More rulemaking to come to address smaller sources of GHG emissions
- Rulemaking to begin in 2011 and conclude by July 2, 2012

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Other Requirements

- Ohio requires permit to install
- Ohio requires minor source permit to operate for facilities not exempt and not subject to Title V operating permit program
- Ohio EPA supposedly working on some "general" or "permit by rule" options for common emissions sources anticipated with Utica Development to alleviate permitting burden

Thank You!

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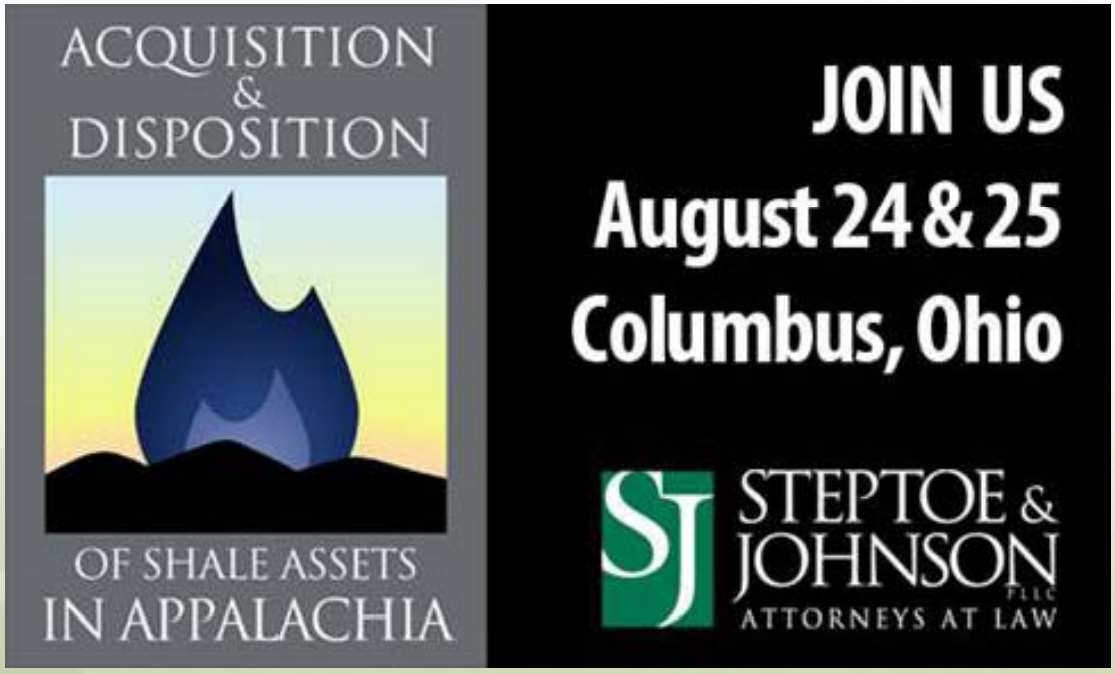
Upcoming Utica Shale Seminar



Special Focus – Pooling and permitting issues in Ohio

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