

# **Shale Drilling Wastes Marcellus & Utica Shales: New Laws, Draft Rules & Real Data from West Virginia**

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**An Ohio Fracture Flow  
Working Group Presentation**

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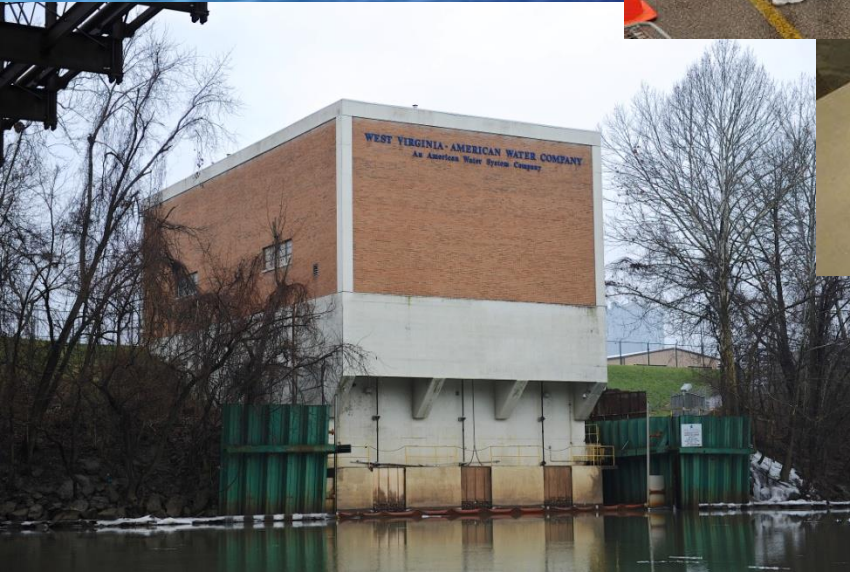


# **Where are you getting your information?**

- **Cert Prof Soil Scientist, Ethics training requirements that certifies our information**
- **Most Cert & Reg Geologists, Sanitarians & Professional Engineers also have ethics standards that they have to meet**
- **Public Relations, Politicians and Political Appointments have no such bounds on their statements**
- **Political Spin is their bread and butter, RE: the infamous ODNR Memo & Press Statement about “secretly funded extremist groups”**



# Events & Data from West Virginia – Lessons Learned



**Elk River Chemical Spill  
January, 2014**



# **Events & Data from West Virginia – Lessons Learned**

- **Discovered by WV DEP Air Emergency Responders to homes and businesses in Charleston**
- **They determined smell coming from the water**
- **Tracked back to the Water Treatment Plant**
- **Upstream to Freedom Industries Facility & arrived 1.5 hours before company employees**
- **~10,000 gallons crude MCHM leaked out of tank, through secondary containment, saturated the riverbank and infiltrated into the Elk River**
- **300,000 people without water for more than a week: cleanup, bottled drinking water & investigation still ongoing**
- **Crude MCHM not as toxic as frack waters & brines**



# **Events & Data from West Virginia – Lessons Learned**

- **Now placing all Shale non-liquid drilling wastes in solid waste landfills, mixed waste or monofills**
- **Testing leachate 2X month for 43 parameters including Gross Alpha, Gross Beta, Radium-226 (alpha), Radium-228 (beta) & Strontium-90**
- **Using US EPA Finished Drinking Water Method 900 series, designed for finished (filtered) water, may under-report for leachate, sludges, slurries and solids**

# Events & Data from West Virginia – Lessons Learned

- 2012 & 2013 data for Meadowfill Landfill monocell, Bridgeport WV, near Clarksburg
- Gross Alpha range 0.419 +/- 8.81 to **1307+/-337**, ave 61+/-28 pCi/L
- Gross Beta range 28.9+/-9.18 to **2027+/-432**, ave 329+/-61 pCi/L
- Radium-226 (Alpha) range 0.00 +/- 12.89 to **23.6+/-18.63**, ave 5.14 +/- 5.11 pCi/L
- Radium-228 (Beta) range 0.338 +/- 2.46 to **42.4+/-32.7**, ave 6.19 +/- 9.45 pCi/L
- Strontium-90 range 0.055 +/- 0.806 to **8.67+/-1.58**, ave 0.973 +/- 1.731 pCi/L



# Events & Data from West Virginia – Lessons Learned

- **Wrong tests being run, may report low**
- **Count times too short (high +/- numbers)**
- **Unknown hold times (DOE says 21 days)**
- **Unknown weather conditions & sampling locations**
- **Unknown volumes of leachate being generated**
- **Still have radiological numbers in leachate above the 5 pCi/L threshold for radium-226 & -228**
- **Know that Marcellus wastes are coming to Ohio, reported by PA & WV**
- **Therefore, we know that Ohio's landfills are becoming radioactive even though Ohio is NOT testing**

# **2013 Ohio Budget Bill: New O&G Laws**

- **Thousands of pages long, 40+ pages relating to oil & gas waste streams**
- **Much testimony from citizens to remove section to allow for a proper discussion in a separate bill.**
- **Removed from House Bill 59, not in Senate Bill version, but added, last minute, in the conference committee final version without public notice**

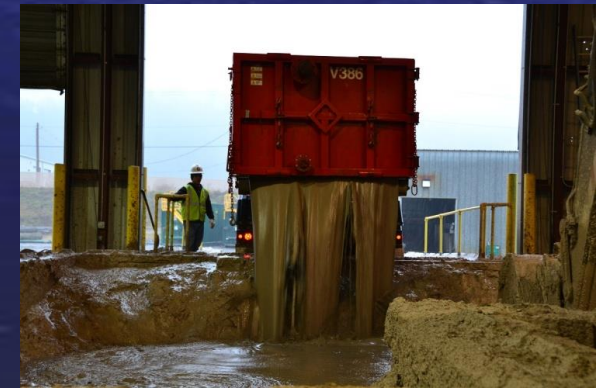


# Remember the NORM – TENORM Confusion?

- **Four National Definitions for NORM-TENORM**
- **Ohio uses Conference of Radiation Control Program Directors, 1990, least restrictive & amended even further in 2013**
- **US EPA, Nat. Academy Science and ANSI all add to NORM “potential for increased exposure” making whole waste stream TENORM & subject to testing**
- **5 pCi/g (US EPA clean-up standard) & 5 pCi/L (US EPA Drinking Water MCL) would apply to whole waste stream**

# 2013 Ohio Budget Bill: New O&G Laws

- **ORC Sec 3748.01 (W) (X) & (Y) All new language**
- **(X) Redefined NORM and TENORM, specifically removed drill cuttings from TENORM *does not include drill cuttings, natural background radiation, byproduct material, or source material***
- **(Y) "Drill cuttings" means the soil, rock fragments, and pulverized material that are removed from a borehole and that may include de minimus amount of fluid that results from a drilling process**



Recycling drill cuttings PA



# 2013 Ohio Budget Bill: New O&G Laws

- ORC Sec 1509.074 (A)(1) Only TENORM has to be tested for radium-226 & -228 (leaves out 80-90% of the waste stream) the owner shall determine the concentration of radium-226 and radium-228 in representative samples of the material *if the material is technologically enhanced naturally occurring radioactive material*



Pipe Scale still TENORM



# 2013 Ohio Budget Bill: New O&G Laws

- ORC Sec 3734.02 (P)(2) & (3)  
TENORM higher than 5 piC/g or /L  
can be blended with “stuff” to lower  
level and landfilled – Mixed to  
downblend, not chemically bound



Fill Dirt



Auto & Tire Fluff



Sawdust



# 2013 Ohio Budget Bill: New O&G Laws

- **ORC Sec. 3734.01 (V) "Beneficially use"** includes (no fees charged for disposal)
- **(2) ...to use the material in any manner authorized as a beneficial use in rules adopted by the director (of Ohio EPA)**
- **Sec. 3734.125 ...and that is not technologically enhanced naturally occurring radioactive material...**
- **Shale grain size is too fine for aggregate or fill; possible uses landfill liners or caps**

# 2013 Ohio Budget Bill: New O&G Laws

- **ORC Sec 3748.04 (B)(3) Requiring the maintenance of records on the receipt, use, storage, transfer, and disposal of radioactive material, *including technologically enhanced naturally occurring radioactive material*, and on the radiological safety aspects of the use and maintenance of radiation-generating equipment. *The rules adopted under division (B)(3) of this section shall not require maintenance of records regarding naturally occurring radioactive material.***



# **A Legal Summary & Conclusion**

**\* by Terry Lodge, Esq., Toledo, Ohio**

- **TENORM definition gutted; drill cuttings are the predominant form of drilling wastes.**
- **The presumption is, it's NORM unless the Driller says otherwise. The Driller gets to decide whether it's NORM or TENORM, not based on radiation content or on legal definition, but on the cost of waste disposal (proper TENORM disposal costs ~\$6,000/ton)**
- **"Beneficial use" is an "anything goes" option, defined solely by the Ohio EPA Director (now Craig Butler). Ohio's leaking old landfills can now become the sites of new contamination from radioactive waste which, through the magic of relabeling, is now "beneficial".**

# **A Legal Summary & Conclusion, Cont.**

- **OEPA's pending rulemaking on TENORM is largely a diversion. TENORM will be identified solely by the drilling industry, not by regulation. We will continue to be told that Ohio has tough regulations for fracking wastes but when the laws are studied, the claim does not hold up. Until we ask about NORM (Ohio's version, not US EPA's) we are not asking the right questions.**
- **The O&G industry brings all that radiation to the Earth's surface, the Governor and the Ohio General assembly wave a legislative wand, and it all disappears...for a little while...until it comes back in spills, landfill leachate, etc.**



# **New Draft Rules OAC 1501:9-2-01, 02 & 1501:9-12-10**

- **New “Draft Horizontal Well Site Construction rule establishes the design standards and construction requirements for horizontal well pads in order to protect human health and safety and to prevent damage to natural resources” ODNR O&G**
- **1501:9-12-10 lists referenced Industry Standards**
- **Comments due March 10, 2014; see ODNR DOGR web site <http://oilandgas.ohiodnr.gov/> to comment**

# **Our General Comments**

## **(OEC, Sierra Club, BFC, POGCO, B&W)**

- **There are performance-based criteria in the rules that in some cases have base standards, i.e. “5 CT Specifications for Casing & Tubing” American Petroleum Institute 9<sup>th</sup> ed.;**
- **There are performance-based criteria in the rules that have no base standards, i.e., Dust Control Plan, have to have one but no guidance as how to develop it or if it is adequate;**
- **There are some topics for which the rules are completely silent, i.e. there is no requirement that spills on well pads be captured nor specifications for how surface-level spills on well sites should be collected;**



# **Our General Comments, Cont.**

## **(OEC, Sierra Club, BFC, POGCO, B&W)**

- **There is no mention of requiring a physical barrier under the well pad to prevent the leakage of fluids into soil and groundwater;**
- **There are no requirement for the construction and operation of large freshwater impoundments that get built as part of the drilling pad support system;**
- **There is no mention of what would constitute a violation of the rules or how it would be enforced;**
- **No additional setbacks from surface water bodies or public water supply wells (50 feet water's edge, 300 ft. pumping well is current requirement).**

# **Why write such a rule if it doesn't say how to build the wells or how to enforce the rule?**

- **All rules screened through the "CSI-Ohio: The Common Sense Initiative Business Impact Analysis"**
- **This document requires evaluations of the rule for "Regulatory Intent", Development of the Regulation", "Adverse Impact to (the regulated) Business" and "Regulatory Flexibility"**
- **No requirements for base standards, violations or enforcement**
- **No consideration is required for potential impacts to surrounding property owners, local businesses or local communities. This screening is silent regarding potential impacts, negative or positive, to the neighbors**



# Why write such a rule if it doesn't say how to build the wells or how to enforce the rule?

- **“Development of the Regulation” question 11, “Did the Agency specifically consider a performance-based regulation? Please explain. *Performance-based regulations define the required outcome, but don't dictate the process the regulated stakeholders must use to achieve compliance.*”**
- **ODNR's answer “Yes. The rule is performance based.”**

# Do Other States Do it Differently?

- **It appears that current Public Policy in Ohio is to write rules that do not control how something is built or installed and do not have any mechanism to hold the industry accountable if there is a contamination event.**
- **Other states like PA have construction requirements & consequences in their rules - 2012 Resources For the Future State Comparison Study ([http://www.rff.org/rff/documents/RFF-Rpt-StateofStateRegs\\_Appendices.pdf](http://www.rff.org/rff/documents/RFF-Rpt-StateofStateRegs_Appendices.pdf))**



# **Other Pre-Draft rules we have reviewed**

- **1501:0-1-09 Secondary Containment and Emergency Response**
- **Again, the pre-draft rule is guidance or performance, no way to enforce or note violations.**
- **(B) Basically requires that the owner have an emergency response plan and have it on site. Must submit a copy of the plan to the Chief of O&G, NOT to local emergency management groups**

# **Other Pre-Draft rules we have reviewed**

- **(C) Secondary containment for any non-moving facility, tanks 1,320 gallons or more, very last condition..**
- **8. "when required by the Chief or the Chief's representative, a secondary containment system that is used for servicing, plugging, or hydraulic fracturing operations shall be liquid tight through the installation of an impervious synthetic liner or other impervious materials that makes the containment system impervious."**
- **After WV, can you think of any situation when you would not care if the secondary containment system leaked?**



# **Other Pre-Draft rules we have reviewed**

- **1501:9-1-10 Facilities 15 pages (all types facilities related to O&G but not drilling pads, what about injection wells?)**
- **Again, a performance or guidance rule**
- **(A)(j) Greater distance, no 100-year flood plain, 1,000 ft. from a public water source, 5-year time-of-travel to a protected source (does this include well fields?)**
- **(C) Short-Term Recycling facilities**
- **(D) Environmental site assessment**

# **Other Pre-Draft rules we have reviewed**

- **(E) Storage Standards for containment of fluids and sludges....**
- **(E)(g) Earthen waste impoundment will be permitted for first time, bigger than a football field**
- **Only requires a clay liner, a secondary liner, leachate collection system and sump and a primary synthetic liner but doesn't say what kind or how thick.**
- **PA requires a clay liner, a 40-mil synthetic liner, a leachate collection system and sump, a second 40-mil synthetic liner AND THEY STILL LEAK.**
- **PA's rules determine how they must be built, Ohio leaves up to the Registered Engineer signing off**



# **Other Pre-Draft rules we have reviewed**

- **(E)(h) Tanks**
- **(F) Solids and Solidification standards**
- **(H) Recycle or Reuse of Drill Cuttings on a Facility**
- **(L) Radiation Protection Plan, this TENORM list is specific and longer than we have seen before**
- **(N) Brine and Other Waste Substance Management**
- **(Q) Closure and Reclamation, this section discusses bonding and bond releases**

# Other Pre-Draft rules we have reviewed

- 1501:9-3-06 Permit
- Only change (H)(2)(c) “If an objection is received, the chief shall rule upon the validity of the objection determine if the objection is relevant to the issues of public health or safety, or to good conservation practices, or is without substance. If, in the opinion of the chief, such an objection is not relevant to the issues of public health or safety, or to good conservation practices, or is without substance, or if terms or conditions to a permit can reasonably be expected to prevent issues to public health or safety or to ensure good conservation practices, a permit shall be issued.”
- No Public hearings being held anywhere for anything



# **Other Pre-Draft rules we have reviewed**

- **Approval of new technology or method (in Ohio) for disposal of brine**
- **All performance based**
- **Tell us what you are going to do, how you are going to do it, where the facility will be, make sure you are not in violation of some local code and we will permit it**
- **Once you are permitted, you are grandfathered and do not have to meet later standards**
- **Four facilities approved last week of December 2013, basically mix and fill, nothing new or original, just not in Ohio before**

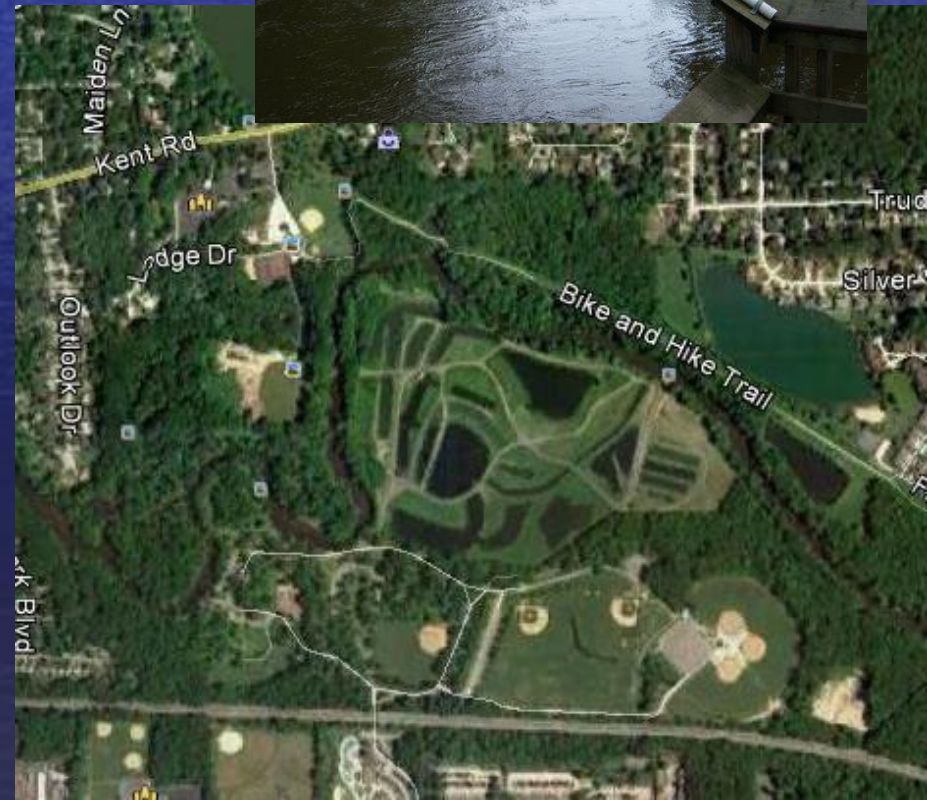
# **Other Pre-Draft rules we have reviewed**

- **The review team will be submitting preliminary comments to ODNR on these pre-draft rules shortly (OTCO can sign on to team comments)**
- **The team will be preparing formal comments when the rules are finally developed into Draft Rules**
- **The team will continue to watch for additional rule changes as they come out**
- **I promise to update OTCO as we learn more**
- **Please make sure you comment, ODNR needs to hear from you or your community & you NEED to be on record to maintain your legal standing**



# Learn from Munroe Falls

- Using the courts to protect water
- Enforce building codes including permits for site construction; upheld & stiff fines collected
- Most recent case upheld Summit Co., overturned Court of Appeals, now in Ohio Supreme Court
- Oral arguments just heard, decision later this year
- Major case for all communities in the state





# **New Paper Ohio Journal of Science this spring or summer**

- **Drilling the Utica & Marcellus Shales in Ohio**
- **What we know, what we don't know**
- **Environmental & legal issues/controls**
- **Public health considerations**
- **Socio-economic considerations**
- **11 authors, multiple backgrounds**
- **Ohio Journal of Science Web Link at OSU,  
<https://kb.osu.edu/dspace/handle/1811/686>**



# Contacts for this presentation & Ohio Journal of Science Papers

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**Ohio Journal of Science Web Link at OSU**,  
<https://kb.osu.edu/dspace/handle/1811/686>

**Ohio EPA** Division of Drinking and Ground  
Waters Source Water Assessment and  
Protection Program,  
[www.epa.ohio.gov/ddagw/swap\\_ssa.aspx](http://www.epa.ohio.gov/ddagw/swap_ssa.aspx)



Keeping Ohio's Water Clean  
Ohio Fracture Flow Working  
Group