

June 16, 2014



Ms. Michelle Braun  
Rules Coordinator  
Ohio EPA  
P.O. Box 1049  
Columbus, Ohio 43216-1049

Antero Resources  
1615 Wynkoop Street  
Denver, CO 80202  
Office 303.357.7310  
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RE: Stakeholder Input on ESO for beneficial use of material from a horizontal well that has come in contact with ROBS that is not TENORM; 3000.100.1661

Dear Ms. Braun:

Antero with assistance from our technical consultant Hull supports the development of guidelines for the beneficial use of material from a horizontal well that has come in contact with refined oil-based substances (ROBS) that is not technically enhanced naturally occurring radioactive material (TENORM) – these materials are herein referred to as “ROBS drill cuttings.” It is our understanding that it is Ohio EPA’s intent to draft a policy directed at management of ROBS drill cuttings, and that Ohio EPA will not cover under this policy non-ROBS considered by Ohio EPA to be “earthen material” and other solid TENORM materials.

We appreciate that Ohio EPA Division of Materials and Waste Management issued the Early Stakeholder Outreach (ESO) for this issue on May 13, 2014. We understand that under HB 59, signed by Governor Kasich on June 30, 2013, amended several sections of Ohio’s law to provide for greater oversight and coordination between the ODH, ODNR, and Ohio EPA. Specific to beneficial use of shale oil/gas exploration and production materials and waste managed off-pad, we understand that Ohio EPA regulates the use of ROBS drill cuttings.

In the context of Ohio’s evolving beneficial use program, we believe ROBS drill cuttings should not be viewed any differently than other materials and wastes that are currently being evaluated under Ohio EPA’s Integrated Alternative Waste Management Program (IAWMP) or Land Application Management Program (LAMP). We acknowledge that Ohio has been very successful in reuse and recycling initiatives, with increased volumes of materials or wastes reused or recycled. ROBS drill cuttings are a high volume, low toxicity solid material containing rock fragments and residual material resulting from the well development process. Properly characterized, data can be compared to applicable compliance standards and/or subjected to exposure assessments to verify that unacceptable risk does not result from the beneficial use of these materials. Additionally, a demonstration of the suitability of ROBS drill cuttings may be completed to demonstrate that the materials meet or exceed the performance standards of other raw materials used in traditional applications. Following these steps, just as they would be followed for any other material or waste subjected for review of beneficial uses, may allow for the diversion of significant volumes of ROBS drill cuttings away from landfill facilities and into end uses that are not only protective of human health, safety, and the environment, but that also assist in meeting Ohio EPA’s goals related to reuse, recycling, and conservation.

Within the new beneficial use program, Ohio EPA has mentioned that there will likely be an opportunity to request an individual permit for “beneficial use by-products” – drill cuttings will fall within this group. Antero and Hull advocate that Ohio EPA establishes a general permit for ROBS drill cuttings. Current industry practices do not result in the full characterization of materials nor have industry leaders completed a comprehensive analysis of the data. We are talking with industry about focusing on a risk-based approach to beneficial use for these materials and the need to divert relatively inert materials from consuming valuable landfill airspace while embracing Ohio’s reuse, recycling, and conservation goals.

We are very interested in working with Ohio EPA and program stakeholders to develop a workable program based upon sound engineering, science and economic principles. As such, we offer the following observations for consideration in the development of a beneficial use policy for ROBS drill cuttings:

1. Ohio regulatory agencies categorized ROBS drill cuttings as not TENORM, and we presume this distinction means they recognize that there is no unacceptable risk to human health, safety, or the environment if these materials are properly managed.
2. Ohio revised code (ORC) 1509.074(A)(4)(b) specifies the off-site beneficial use of ROBS drill cuttings require following ORC 3734.125, which states "The director of environmental protection may adopt rules in accordance with Chapter 119 of the Revised Code establishing requirements governing the beneficial use of material from a horizontal well that has come in contact with a refined oil-based substance and that is not technologically enhanced naturally occurring radioactive material." As such, we believe the intent of the rules developed under HB 59 is for the inclusion of non-TENORM ROBS drill cuttings in the BUB general permit program. We also look forward to the release of Ohio EPA's new beneficial use rules in the near term (anticipated fall 2014) and to working with Ohio EPA to develop specific general permits non-TENORM ROBS drill cuttings.
3. We believe stakeholders appreciate the need to compile, analyze, and exchange chemical and geotechnical information with Ohio EPA to support beneficial use applications for ROBS drill cuttings. Ohio EPA and stakeholders should convene a meeting to discuss expectations and characterization strategies.
4. A risk-based approach should be established for compliance criteria for beneficial use of ROBS drill cuttings. This includes a characterization of the source, potential pathway(s), and receptors – much like Ohio EPA's Voluntary Action Program. Important to this approach is whether the ROBS drill cuttings are used in an encapsulated or unencapsulated end use. There should also be an appreciation of the relative risk of managing this material in its current manner versus a beneficial use application.
5. Potential beneficial use for ROBS drill cuttings that meet compliance criteria for beneficial use may include construction materials, landfill and brownfield cover, manufactured topsoil, engineered fill, pavement base, and mine reclamation/stabilization. Such uses may allow for cost savings for the generator as well as supporting Ohio's reuse, recycling and conservation goals. A generalized estimate of the volume of drill cuttings produced for a typical Utica well is approximately 5,000 tons per well, of which 3,000 tons are solidified air cuttings and 1,700 tons are solidified ROBS drill cuttings. If costs for characterization, hauling, and disposal of solidified ROBS drill cuttings is estimated at \$60 per ton and 1,700 tons of solidified ROBS are produced per well bore, then the costs for management at a MSW landfill may be in the \$102,000 per bore hole range. Assuming 5,000 new wells will be installed over the next decade, and the cost for beneficial use is one-half that of MSW landfill management, the resulting cost saving may be in the \$255 million ballpark (and this does not consider the offset of resources conserved or environmental impact benefits realized).

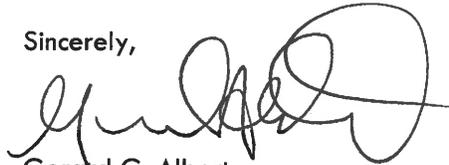
These are just a few general observations that Ohio EPA and stakeholders may consider as you move forward with a ROBS drill cuttings beneficial use policy. Again, we do not believe that ROBS drill cuttings should be approached any differently than other material or waste currently eligible for beneficial use under Ohio EPA's programs – we believe that inclusion of ROBS drill cuttings in the beneficial use program

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supports the three core concepts of sustainability (environmental, social and economic considerations). Ultimately, we appreciate that the shale oil/gas industry will be responsible for the safe management of their materials and wastes, and believe that Ohio EPA and stakeholders can develop compliance criteria within the framework of the new beneficial use program.

We will contact you soon to schedule a time to meet directly to discuss additional thoughts and details of the beneficial use rule. Thank you for dedicating significant time and energy to this effort. We look forward to continuing to work with you on this most important issue.

Sincerely,

A handwritten signature in black ink, appearing to read 'Gerard G. Alberts', written over a white background.

Gerard G. Alberts  
Manager, Environmental & Regulatory  
Antero Resources

cc: Aaron L. Goddard, MUES, CESSWI, Environmental Field Coordinator, Ohio, Antero Resources  
William G. Petruzzi, PG, Hull & Associates, Inc.



June 16, 2014

Ohio Environmental Protection Agency (EPA)  
Attention: Michelle Braun  
P.O. Box 1049  
Columbus, OH 43216-1049

Re: Early Stakeholder Outreach (ESC) comments regarding HB 59—beneficial use of material from a horizontal well that has come into contact with refined oil-based substances (ROBS) that is not technologically enhanced naturally occurring radioactive material (TENORM)

Dear Ms. Braun:

API Ohio is a state affiliate office of the American Petroleum Institute (API). API is a national trade association representing over 500 member companies involved in all aspects of the oil and natural gas industry. API's members include producers, refiners, suppliers, pipeline operators, and marine transporters, as well as service and supply companies and contractors that support all segments of the industry. API and its members are dedicated to protecting the environment while economically developing and supplying energy resources for consumers. API members carry out operations for safe and environmentally responsible exploration and production of natural gas, crude oil, and associated liquids, including production via the use of hydraulic fracturing in unconventional plays. Additionally, the API standards program covers all aspects of exploration and production operations, including waste management and is relied upon to drive excellence in operational performance around the world. Since 1924, API's American National Standards Institute (ANSI) accredited standards and development program has been the recognized leader for our industry.

We appreciate Ohio EPA's ESO released on May 13, 2014, requesting comments on "House Bill 59 – Beneficial Use of Material from a Horizontal Well that has come in contact with ROBS that is not TENORM<sup>1</sup>." As you may recall, we previously submitted comments to Ohio EPA on November 1, 2013 in response to Ohio EPA's ESO "House Bill 59 – TENORM Acceptance at Solid Waste Landfills and Transfer Facilities," a companion issue. Our association welcomes Ohio EPA's overall efforts to address the evolving issues related to these waste materials, as they are critical to the oil and natural gas exploration industry.

Since both TENORM and non-TENORM ROBS drill cuttings waste need to be addressed, we initially note that there has been no further clarification or certainty with respect to how the Agency intends to address TENORM waste, which was the subject of the November 1, 2013 ESO. We would appreciate some further guidance and certainty on the handling of TENORM before we tackle the non-TENORM ROBS drill cuttings waste issue.

With respect to the beneficial use of non-TENORM ROBS drill cuttings; we suggest that the issue be incorporated into Ohio EPA's ongoing discussion regarding beneficial use of other wastes and materials. Ohio EPA recently released an ESO titled "Beneficial Use: The 'Co-Product' Concept" (May 8, 2014) and also released "Conceptual Draft: Beneficial Use Byproduct Program" (March 2014), which included beneficial use concepts of "co-products," "by-products," and "beneficial use by-product (BUB) general permit."

Ohio Revised Code (ORC) 1509.074(A)(4)(b) specifies the off-site beneficial use of ROBS drill cuttings require following ORC 3734.125, which states "The director of environmental protection may adopt rules in accordance with Chapter 119. of the Revised Code establishing requirements governing the beneficial use of material from a horizontal well that has come into contact with a refined oil-based substance that is not technologically enhanced naturally occurring radioactive material." As such, we believe the intent of the rules developed under HB 59 is for the inclusion of non-TENORM ROBS drill cuttings in the BUB general permit program. We also look

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<sup>1</sup> For the purposes of this comment letter, we use the term "non-TENORM ROBS drill cuttings" to mean "material from a horizontal well that has come in contact with refined oil-based substances that is not TENORM".

forward to the Ohio EPA release of new beneficial use rules in the near term (anticipated fall 2014) and to working with Ohio EPA to develop specific general permits for non-TENORM ROBS drill cuttings.

Since we believe stakeholders appreciate the need to compile, analyze, and exchange chemical and geotechnical information with Ohio EPA to support beneficial use applications for non-TENORM ROBS drill cuttings, Ohio EPA and stakeholders should convene a meeting to discuss expectations and characterization strategies.

At the very least, a risk-based approach should be established for compliance criteria for beneficial use of non-TENORM ROBS drill cuttings. This could include a characterization of the source, potential pathway(s), and receptors – much like Ohio EPA's Voluntary Action Program. Important to this approach is whether the non-TENORM ROBS drill cuttings are used in an encapsulated or un-encapsulated end use. There should also be an appreciation of the relative risk of managing this material in its current manner versus a beneficial use application.

Finally, potential beneficial use for non-TENORM ROBS drill cuttings that meet compliance criteria may include construction materials, landfill and brownfield cover, manufactured topsoil, engineered fill, pavement base, and mine reclamation/stabilization. This type of use would not only allow for cost savings for the generator, but would also support Ohio's reuse, recycling, and conservation goals. As it relates to the former, if costs for characterization, hauling, and disposal of non-TENORM ROBS drill cuttings is estimated at \$60/cy and 500 cy of non-TENORM ROBS drill cuttings are produced per well bore, then the costs for management at a municipal solid waste (MSW) landfill may be in the \$30,000/bore hole range. If we assume 5,000 new wells will be drilled over the next decade, and the cost for beneficial use is one-half of the MSW landfill management, the aforementioned savings could be in the ballpark of \$75 million, without taking into the account the offset of resources conserved.

API Ohio appreciates the opportunity to provide this important input to Ohio EPA as part of its early stakeholder outreach. We will continue to work with the Agency as constructive partners in this process and we look forward to the opportunity to meet and discuss our comments with you. We appreciate your recognition that openness, transparency, and stakeholder involvement are all integral parts to a successful regulatory process. Should you have any questions, please do not hesitate to contact me.

Sincerely,



Christian B. Zeigler  
Executive Director  
API Ohio

CBZ/chp

cc: Dan Harris, Ohio EPA

16 June 2014

Ms. Michelle Braun  
Ohio Environmental Protection Agency  
Division of Materials and Waste Management  
P. O Box 1049  
Columbus, OH 43216-1049  
michelle.braun@epa.ohio.gov

**CONSOL Energy Inc.**

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1000 CONSOL Energy Drive  
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**phone:** 724/485-4164  
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**e-mail:** [carriecrumpton@consolenergy.com](mailto:carriecrumpton@consolenergy.com)  
**web:** [www.consolenergy.com](http://www.consolenergy.com)

**CARRIE B. CRUMPTON**

*Director – Environmental Compliance  
and Regulatory Affairs*

RE: Proposed Chapter 105 Technical Guidance Documents

Dear Ms. Braun:

CONSOL Energy Inc. (CONSOL), a leading diversified energy company headquartered in the Appalachian Basin, and CNX Gas Company LLC (CNX Gas), a wholly owned subsidiary of CONSOL appreciates the opportunity to participate in the Early Stakeholder Outreach on the potential adoption of rules under ORC Section 3734.125 regarding beneficial use of material from a horizontal well that has come in contact with a refined oil-based substance and that is not TENORM. This was published by the Ohio Environmental Protections Agency (OEPA) on May 13, 2014.

CONSOL supports the effort of the OEPA to develop beneficial use rules. Upon reviewing the OEPA Early Stakeholder Outreach publication and requests, CONSOL would like to make the following comments:

- OEPA has asked for recommendations as to the types of beneficial uses suited to these types of materials. OEPA also states that reviews would be case specific dependent upon the material, the beneficial use, and the location of the use.
  - CONSOL is open to beneficial reuse scenarios that OEPA decides are appropriate for this type of material. We would suggest the need for flexibility as to the type of beneficial use intended for these materials. Maintaining flexibility in the process would encourage operators to explore different avenues for beneficial use. What may make sense in one circumstance may not in the next. We agree that approvals for the type of beneficial use of these materials should be reviewed and vetted by OEPA on a per application basis if a blanket approval is not already granted. This material could potentially be beneficially reused as fill material in well pad construction and reclamation, blended with other material and used as fill material for access roads, or a myriad of other options.
  - While the potential for beneficial use of these materials could be advantageous for the regulatory agencies, landfills, operators and other segments of industry; it should not be a *requirement*. Operators need flexibility to continue to dispose of this material as needed in approved landfills.
- OEPA states that drill cuttings coming into contact with refined oil-based substances that are sent off-site for disposal are classified as a solid waste under Ohio EPA regulations. While drill cuttings that have come into contact with refined oil-based substances may be disposed of at a licensed solid waste landfill, ORC Section 3734.125 provides that the Ohio EPA Director may adopt rules for the beneficial use of such material.
  - CONSOL understands OEPA's concern about the uncertain future amounts of drill cuttings being

sent to Ohio landfills and acknowledges the potential need to beneficially use these materials. However, by disposing of these materials as waste and properly tracking them through the cradle-to-grave process, we are limiting potential liability concerning these wastes. Therefore, language is needed to assure liability release for beneficial use projects involving these materials if operators are to truly consider this as a viable option.

- OEPA states that they are to include the beneficial use of horizontal well material that has been in contact with refined oil-based substances and that are not TENORM into the broader dialogue of developing a beneficial use regulatory program addressing various types of wastes and beneficial uses. Upon adoption of these broader beneficial use regulations, the above horizontal well material beneficial use rule may be rescinded.
  - We feel that language is needed in the rulemaking to ensure that projects approved under the “horizontal well material beneficial use rule” receive special consideration for completion and exemption from liability in the event that the rule is rescinded during or after completion of the project. This language could provide Operators a much needed assurance that in the event of the rule is rescinded; existing beneficial reuse projects will not present additional liabilities.
- Ohio EPA is also requesting the following information from stakeholders who may be impacted by the new program.
  - Would this regulatory program have a positive impact on your business? Please explain how.
    - Potentially. CONSOL feels that a cost-benefit analysis would need to be performed and the potential increased liability would need to be considered, based on the rule, to know for sure.
  - Would this regulatory program have an adverse impact on your business? If so, please identify the nature of the adverse impact (for example, license fees, fines, employer time for compliance).
    - Potentially. CONSOL feels that if beneficial use is required, rather than voluntary, the potential for significant increased costs and liability are present.

CONSOL appreciates the opportunity to contribute during the Early Stakeholder Outreach process and looks forward to continued partnership with the OEPA to reduce waste disposal and encourage beneficial reuse of materials.

Regards,



Carrie B. Crumpton  
Director – Environmental Compliance and Regulatory Affairs  
CONSOL Energy, Inc.

cc: Frank Calderon, General Manager, Environmental Compliance and Regulatory Affairs – CONSOL



June 16, 2014

Ms. Michelle Braun  
Rules Coordinator  
Ohio EPA  
P.O. Box 1049  
Columbus, Ohio 43216-1049

RE: Stakeholder Input on ESO for beneficial use of material from a horizontal well that has come in contact with ROBS that is not TENORM; 3000.100.1661

Dear Ms. Braun:

Hull<sup>1</sup> supports the development of guidelines for the beneficial use of material from a horizontal well that has come in contact with refined oil-based substances (ROBS) that is not technically enhanced naturally occurring radioactive material (TENORM) – these materials are herein referred to as “ROBS drill cuttings.” It is our understanding that it is Ohio EPA’s intent to draft a policy directed at management of ROBS drill cuttings, and that Ohio EPA will not cover under this policy non-ROBS considered by Ohio EPA to be “earthen material” and other solid TENORM materials.

We appreciate that Ohio EPA Division of Materials and Waste Management issued the Early Stakeholder Outreach (ESO) for this issue on May 13, 2014. We understand that under HB 59, signed by Governor Kasich on June 30, 2013, amended several sections of Ohio’s law to provide for greater oversight and coordination between the ODH, ODNR, and Ohio EPA. Specific to beneficial use of shale oil/gas exploration and production materials and waste managed off-pad, we understand that Ohio EPA regulates the use of ROBS drill cuttings.

In the context of Ohio’s evolving beneficial use program, we believe ROBS drill cuttings should not be viewed any differently than other materials and wastes that are currently being evaluated under Ohio EPA’s Integrated Alternative Waste Management Program (IAWMP) or Land Application Management Program (LAMP). We acknowledge that Ohio has been very successful in reuse and recycling initiatives, with increased volumes of materials or wastes reused or recycled. ROBS drill cuttings are a high volume, low toxicity solid material containing rock fragments and residual material resulting from the well development process. Properly characterized, data can be compared to applicable compliance standards and/or subjected to exposure assessments to verify that unacceptable risk does not result from the beneficial use of these materials. Additionally, a demonstration of the suitability of ROBS drill cuttings may be completed to demonstrate that the materials meet or exceed the performance standards of other raw materials used in traditional applications. Following these steps, just as they would be followed for any other material or waste subjected for review of beneficial uses, may allow for the diversion of significant volumes of ROBS drill cuttings away from landfill facilities and into end uses that are not only protective of human health, safety, and the environment, but that also assist in meeting Ohio EPA’s goals related to reuse, recycling, and conservation.

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<sup>1</sup> Hull & Associates, Inc. (Hull) is an engineering and science firm with five offices in Ohio (Cincinnati, Cleveland, Columbus, St. Clairsville, and Toledo), one office in Pittsburgh, Pennsylvania, and one office in Indianapolis, Indiana. We have assisted public and private industry clients with the implementation of safe and responsible waste management programs for over 30 years. Consequently, we are very familiar with the evolution of state and federal environmental regulations that have led to our work with clients in more than 10 states at over 150 waste management facilities that include landfills, transfer stations, composting operations, and material management and recycling facilities. Hull has been involved in the beneficial use rule development since the inception of modern waste and material management regulations, and we advocate for any and all rules to be based upon sound engineering, science and economic principles.

Within the new beneficial use program, Ohio EPA has mentioned that there will likely be an opportunity to request an individual permit for “beneficial use by-products” – drill cuttings will fall within this group. Hull advocates that Ohio EPA establishes a general permit for ROBS drill cuttings. Current industry practices do not result in the full characterization of materials nor have industry leaders completed a comprehensive analysis of the data. We are talking with industry about focusing on a risk-based approach to beneficial use for these materials and the need to divert relatively inert materials from consuming valuable landfill airspace while embracing Ohio’s reuse, recycling, and conservation goals.

We are very interested in working with Ohio EPA and program stakeholders to develop a workable program based upon sound engineering, science and economic principles. As such, we offer the following observations for consideration in the development of a beneficial use policy for ROBS drill cuttings:

1. Ohio regulatory agencies categorized ROBS drill cuttings as not TENORM, and we presume this distinction means they recognize that there is no unacceptable risk to human health, safety, or the environment if these materials are properly managed.
2. Ohio revised code (ORC) 1509.074(A)(4)(b) specifies the off-site beneficial use of ROBS drill cuttings require following ORC 3734.125, which states “The director of environmental protection may adopt rules in accordance with Chapter 119 of the Revised Code establishing requirements governing the beneficial use of material from a horizontal well that has come in contact with a refined oil-based substance and that is not technologically enhanced naturally occurring radioactive material.” As such, we believe the intent of the rules developed under HB 59 is for the inclusion of non-TENORM ROBS drill cuttings in the BUB general permit program. We also look forward to the release of Ohio EPA’s new beneficial use rules in the near term (anticipated fall 2014) and to working with Ohio EPA to develop specific general permits non-TENORM ROBS drill cuttings.
3. We believe stakeholders appreciate the need to compile, analyze, and exchange chemical and geotechnical information with Ohio EPA to support beneficial use applications for ROBS drill cuttings. Ohio EPA and stakeholders should convene a meeting to discuss expectations and characterization strategies.
4. A risk-based approach should be established for compliance criteria for beneficial use of ROBS drill cuttings. This includes a characterization of the source, potential pathway(s), and receptors – much like Ohio EPA’s Voluntary Action Program. Important to this approach is whether the ROBS drill cuttings are used in an encapsulated or unencapsulated end use. There should also be an appreciation of the relative risk of managing this material in its current manner versus a beneficial use application.
5. Potential beneficial use for ROBS drill cuttings that meet compliance criteria for beneficial use may include construction materials, landfill and brownfield cover, manufactured topsoil, engineered fill, pavement base, and mine reclamation/stabilization. Such uses may allow for cost savings for the generator as well as supporting Ohio’s reuse, recycling and conservation goals. A generalized estimate of the volume of drill cuttings produced for a typical Utica well is approximately 5,000 tons per well, of which 3,000 tons are solidified air cuttings and 1,700 tons are solidified ROBS drill cuttings. If costs for characterization, hauling, and disposal of solidified ROBS drill cuttings is estimated at \$60 per ton and 1,700 tons of solidified ROBS are produced per well bore, then the costs for

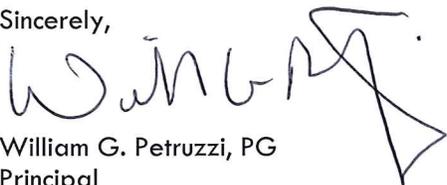
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management at a MSW landfill may be in the \$102,000 per bore hole range. Assuming 5,000 new wells will be installed over the next decade, and the cost for beneficial use is one-half that of MSW landfill management, the resulting cost saving may be in the \$255 million ballpark (and this does not consider the offset of resources conserved or environmental impact benefits realized).

These are just a few general observations that Ohio EPA and stakeholders may consider as you move forward with a ROBS drill cuttings beneficial use policy. Again, we do not believe that ROBS drill cuttings should be approached any differently than other material or waste currently eligible for beneficial use under Ohio EPA's programs – we believe that inclusion of ROBS drill cuttings in the beneficial use program supports the three core concepts of sustainability (environmental, social and economic considerations). Ultimately, we appreciate that the shale oil/gas industry will be responsible for the safe management of their materials and wastes, and believe that Ohio EPA and stakeholders can develop compliance criteria within the framework of the new beneficial use program.

We will contact you soon to schedule a time to meet directly to discuss additional thoughts and details of the beneficial use rule. Thank you for dedicating significant time and energy to this effort. We look forward to continuing to work with you on this most important issue.

Sincerely,

A handwritten signature in black ink, appearing to read 'WGP', with a large, stylized flourish extending from the end of the signature.

William G. Petruzzi, PG  
Principal

Ohio EPA - DMWM  
ATTN: Michelle Braun  
P.O. Box 1049  
Columbus, OH 43216-1049  
Sent via email to: michelle.braun@epa.ohio.gov

June 16, 2014

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Comments on Early Stakeholder Outreach for Beneficial Use of Material from a Horizontal Well that has come into contact with refined oil-based substances that is not TENORM

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The Ohio Environmental Council (“OEC”), Sierra Club – Ohio Chapter, Buckeye Forest Council, People’s Oil and Gas Collaborative - Ohio, and the City of Canton Water Department submit these comments to the Ohio Environmental Protection Agency (“OEPA” or “Agency”) for your consideration regarding proposed concepts for regulating the beneficial use of materials for a horizontal well that has come into contact with refined oil-based substances that is not TENORM.

The scientific analysis and technical review for these comments were provided by Dr. Julie Weatherington-Rice, PhD, CPG, CPSS, Sr. Scientist at Bennett and Williams on behalf of the City of Canton’s Water Department.

## **INTRODUCTION**

During the legislative debates on Ohio House Bill 59 (the Biennial Budget), which included substantive regulation of Oil and Gas related waste containing TENORM, the OEC and other organizations recommended that the General Assembly remove all provisions concerning the acceptance of shale gas waste materials into Ohio's solid waste landfills. It was our position that if the current administration wants to have this policy debate, it should be a fair and open debate, with separate legislation introduced appropriately analyzing and accounting for the responsibilities of the industry as well as the three state agencies with statutory responsibility over oil and gas and landfills. This is a very complex issue, with many technical aspects, and should have been given adequate time and consultation with Ohio’s scientific community. Most importantly, public health and safety should be given priority over the need to quickly change Ohio's solid waste laws to accommodate the shale gas industry in Ohio and the demand for shale gas waste disposal from surrounding states.

The General Assembly, however, did not heed that call. OEC feels that it is important here to emphasize the effect of HB59’s haphazard development on the rulemaking process. For instance, Ohio EPA and its partner agencies at the Department of Natural Resources and Department of Health now are confined to a regulatory regime that is not scientifically developed to be protective of human and environmental health, and is not supported with adequate state agency resources to monitor radioactive shale gas waste materials. Yet, most significantly, due to the provisions in HB59, Ohio does not adhere to the US EPA, National Academy of Science nor American National Standards Institute (ANSI) definitions of NORM and TENORM. Instead, Ohio has codified and then further modified a definition that

predates horizontal drilling and was created before the current situation existed. To be in agreement with Federal standards, and be fully protective of human health, Ohio needs to re-codify these appropriate definitions.

## GENERAL COMMENTS

The Fact Sheet defines the input that Ohio EPA is seeking, including:

- *“Is the general regulatory framework proposed the most appropriate? Should the Agency consider any alternative framework?”*
- *“What options are available for improving an identified concept?”*
- *“Are there considerations that Agency should take into account when developing a specific concept?”*
- *“Is there any information or data the Agency would be aware of when developing program concepts or rule language?”*

The following general comments address all four of these requests

### **1. Is the general regulatory framework proposed the most appropriate?**

The general regulatory framework proposed is not the most appropriate because it does not agree with the definitions used by US EPA, National Academy of Science and ANSI, nor does it even agree with its own definitions. Most importantly, the statutory and regulatory frameworks expose the public to unnecessary, yet potentially significant health risks.

With H.B. 59, the Ohio legislature de-regulated drill cuttings from TENORM status to NORM status – thereby eliminating sensible testing, tracking, and disposal requirements. We can only assume that the General Assembly’s deregulation of drill cuttings was driven by a desire to allow for cheap waste disposal by industrial operators at the clear expense of public health concerns. Moreover, the legislature’s deregulation of drill cuttings may well position Ohio as the lowest-cost dumping ground for dangerously toxic and radioactive waste. We cannot find any neighboring state that embraces the idea of “beneficial use,” wherein materials from horizontal drilling are put into direct contact with the environment. Out-of-state operators may therefore come to view Ohio as the “cheap” option for cuttings disposal.

O.R.C. Section 3748.01(X) defines TENORM as “naturally occurring radioactive material with radionuclide concentrations that are increased by or as a result of past or present human activities.” Drilling, fracking, and extraction of drill cuttings are all human activities that increase concentrations of radioactivity at the surface as well as increasing the loading of toxic heavy metals. The legislature’s redefinition of drill cuttings as NORM is therefore illogical in addition to unscientific.

Beneficial use of drill cuttings (whether ROBS-exposed or not) presents the threat of widespread public exposures to unacceptably high levels of radioactivity and toxic heavy metals. The public will have no reason for confidence in the beneficial use program because no testing of materials is mandated and levels of radioactivity and volumes of toxic heavy metals will likely be completely unknown. While some cuttings will likely have only low

radioactivity levels, others are certain to have unacceptably high levels – the inevitable cores of shale layers, for example. This statement is also true of the levels of toxic heavy metals present in the drill cuttings.

**2. Should the Agency consider any alternative framework?**

Yes, the Agency should follow the federal definitions of TENORM and not get into a potential legal bind of supporting a questionable Ohio law. Allowing for beneficial use of drill cuttings (whether ROBS-contacted or not) could expose operators and end-use property owners to legal liability for cleanup where radioactivity and toxic heavy metals are later found to exceed acceptable levels. The Agency should consider the significant cost savings that could be enjoyed by denying beneficial use eligibility to drill cuttings. Specifically, financial burdens will likely arise when areas that use these materials for “beneficial use” today are later declared to be Brownfields and potentially responsible parties are subject to clean-up actions under CERCLA and/or RCRA in the future.

**3. What options are available for improving an identified concept?**

We recommend that the OEPA follow the federal definitions for NORM and TENORM, and that the Agency follow the examples of our sister states Michigan, Pennsylvania, and West Virginia who all require that rock/drill cuttings be deposited into a landfill that is approved for and monitored for low-level radiation and toxic heavy metals. Pennsylvania is currently completing a one-year study on the efficiency of their screening program. West Virginia has just drafted rules for comment that will require testing of the waste streams to make sure that there is no radioactivity above the US EPA clean-up standards of 5 pCi/g going into their shale waste drilling monofills. They are already testing the collected leachates from those monocells for 43 different parameters including radioactivity and toxic heavy metals twice a month. We cannot find any neighboring state who embraces the idea of “beneficial use,” wherein materials from horizontal drilling are put into direct contact with the environment.

Alternatively, any drill cuttings that are subject to beneficial use should be rigorously tested for radioactivity and toxic heavy metals contaminant levels. ROBS-exposed cuttings should not be eligible for beneficial use in any event. We submit that it is highly unlikely that a uniform, enforceable, and reliable system of determining whether drill cuttings exposure to ROBS is “de minimus” is achievable. Any ROBS exposure should therefore disqualify cuttings from beneficial use eligibility.

**4. Are there considerations the Agency should take into account when developing a specific concept?**

We recommend that the Agency take into account that shale drilling wastes are known to contain hydrocarbons and toxic heavy and radioactive metals which are harmful to the environment and human health. While Ohio has chosen to undertake limited research into the hydrocarbon and metals contents of shale gas and oil drilling wastes, much research has been undertaken by others states and at the federal level. The US Geological Survey has been publishing studies on the radioactive nature of Black Shales for more than 50 years. The State of West Virginia has been monitoring leachate collected from their shale waste monofills twice a month for 43 parameters plus field measurements since 2011. Ohio should

review this body of research and undertake their own before depositing these materials into the environment. Damage from exposures to toxic heavy and radioactive metals and hydrocarbons are serious matters of public health. The harm to health and environment from improper disposal and “beneficial use” is not limited to what you name the substances in law or rule, but by what they actually are.

**5. Is there any information or data the Agency should be aware of when developing program concepts or rule language?**

In short: yes. Ohio EPA should start by reviewing the information developed by the US EPA on this topic. A good place to start is on their public web pages. The Agency also should review the research of the US Geological Survey. OEPA personnel should speak with counterparts in Michigan and Pennsylvania to understand how they have addressed these issues. As stated above, West Virginia is still developing their program; however, to the best of our knowledge, no other state agencies are thinking or talking about "beneficial uses" for these shale gas waste stream materials.

Ohio EPA should review CERCLA, RCRA, and other relevant federal laws in order to take into consideration legal liabilities incurred by the state, operators, and landowners as a direct effect of weak interpretations of laws, state or otherwise, pertaining to the disposal of such substances, or the creation of new brownfields as a result of these practices.

**QUESTIONS FOR OHIO EPA**

We also request that the Agency address the additional questions below in your response to our comments:

1. Where is OEPA’s evidence that this waste does not contain hazardous materials and/or contaminants at levels unacceptable to human health?
2. Where is OEPA’s evidence that this waste is not radioactive. Until Ohio provides studies that the cuttings coming from even the vertical drilling are not radioactive it is folly to believe that this waste could provide any benefit.
3. What did OEPA use to determine potential pathways for exposure to this waste? How did OEPA determine potential radiation dose to the public and natural ecosystems from releases of radionuclides from this waste?
4. Did the agency do a risk assessment to determine the bio-accumulate dose over time of the metals and other contaminants present?

**CONCLUSION**

We recognize we are asking Ohio EPA to move beyond the requirements of the current ill-informed Ohio Revised Code definitions and adhere to Federal policy on this issue. We understand that this will be difficult for the Agency to achieve at the present time. However, by doing so, the Agency will ensure a significant cost savings to Ohio when areas that use these materials for “beneficial use” today are later declared to be Brownfields and subject to clean-up actions under RCRA in the future. It is always more cost effective to prevent contamination than it is to remediate it.

Sincerely,

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June 16, 2014

**VIA US MAIL AND E-MAIL**

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Re: Ohio Oil and Gas Association Response to Ohio EPA's Early Stakeholder Outreach on the Beneficial Use of Material from a Horizontal Well that has Come in Contact with Refined Oil-Based Substances that is Not TENORM – Request for Stakeholder Meeting

Dear Ms. Braun:

Ohio House Bill (HB) 59, which became effective September 29, 2013, amended several sections of Ohio law relating to the management of wastes and other materials from oil and gas wells. On May 13, 2014, Ohio EPA sought Early Stakeholder Outreach (ESO) review and comment on the Beneficial Use of Material from a Horizontal Well that has come in contact with refined oil-based substances that is not TENORM (“material”).

The Ohio Oil and Gas Association (Association) supports the overall concept of a Beneficial Use Regulatory Program,<sup>1</sup> and is especially interested in working with Ohio EPA on the development of a beneficial use program specific to the oil and gas industry. Such a program offers horizontal shale producers in Ohio a potential alternative to unnecessary and expensive landfill disposal of material from horizontal wells, such as drill cuttings, that can be safely and responsibly reused. At this point, however, Ohio EPA's development of a beneficial use program is in its infancy, particularly the agency's consideration of a separate program for the beneficial use of material from horizontal wells. As such, the Association's members have not

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<sup>1</sup> The Association, on behalf of itself and its members, submitted initial “early stakeholder response” comments on Ohio EPA's conceptual framework paper for Beneficial Use of Industrial Materials Regulatory Program on September 21, 2012, and also submitted comments on Ohio EPA's Conceptual Draft Rule Language for the Beneficial Use Regulatory Program Development on June 21, 2013. Both sets of comments are attached as Attachment A.

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yet collected and analyzed data sufficient in quantity or quality to provide meaningful comments in response to the agency's ESO.

The Association recognizes the importance of promoting conservation of raw materials through recycling and reuse initiatives, and is committed to the continued efficient and effective development of oil and natural gas resources in Ohio, while being protective of human health and the environment. In this connection, the Association respectfully requests that Ohio EPA maintain an open dialogue with the oil and gas industry and allow for the submittal of relevant information and data, as that information becomes available, beyond the June 16, 2014 comment period. The Association also requests that Ohio EPA hold a stakeholder meeting during which horizontal shale producers currently operating in Ohio would be available to address the agency's questions and provide any information that is available regarding the development of a beneficial use program for material from horizontal wells. The Association would be happy to coordinate such a meeting should Ohio EPA grant this request.

Very truly yours,



Ryan D. Elliott

RDE/rde  
Attachments

# **Attachment A**



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June 21, 2013

**DELIVERY VIA REGULAR U.S. MAIL AND E-MAIL**

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Re: Comments of The Ohio Oil and Gas Association - Conceptual Draft Rule  
Language: Beneficial Use Regulatory Program Development

Dear Ms. Braun:

On May 24, 2013, Ohio EPA issued conceptual draft rule language for a Beneficial Use Regulatory Program, requesting comments from interested stakeholders. The Ohio Oil and Gas Association (Association), on behalf of its itself and its members, is pleased to submit these remarks as requested and looks forward to assisting Ohio EPA in the further development of a Beneficial Use Program for Ohio.<sup>1</sup>

**I. Introduction**

The Association is one of the largest and most active state-based oil and natural gas associations in the country and has been the representative of Ohio's oil and gas producing industry since 1947. Its over 3,300 members are involved in all aspects of the exploration, development, production and marketing of crude oil and natural gas resources in the State of Ohio. Because of the small size of many of the Association's members, they often rely on the Association as their primary source of information on industry trends, activities, tax changes, legislation and regulatory matters. The Association also serves to protect its members' interests by participating in federal and state regulatory actions involving the crude oil and natural gas industry.

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<sup>1</sup> The Association submitted initial "early stakeholder response" comments on Ohio EPA's conceptual framework paper for a Beneficial Use of Industrial Materials Regulatory Program, on September 21, 2012, which it fully incorporates here and attaches as Exhibit A.

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Ohio EPA's development of a Beneficial Use Regulatory Program offers stakeholders a potential alternative to unnecessary and expensive landfill disposal of materials that might otherwise be treated as waste or unwanted material. It has the potential to promote conservation of raw materials through recycling and reuse initiatives, and to facilitate the continued efficient and effective development of oil and natural gas resources in Ohio, while being protective of human health and the environment. Ohio EPA has stated that the draft rules are only conceptual at this point in the rulemaking process and that the agency is primarily concerned with establishing the general framework for a Beneficial Use Program. It is in this context that the Association submits these comments.

## **II. Specific Comments**

### *A. The Mistaken Characterization of "Beneficial Use" as "Disposal"*

The Association supports the overall concept of a Beneficial Use Regulatory Program for byproduct materials that would otherwise be considered an Ohio EPA-regulated solid waste sent to a regulated landfill for disposal. However, the draft rules are written such that the material subject to beneficial use is automatically assumed to be a "waste" and, thus, Ohio EPA appears to be treating "beneficial use" as a type of "disposal" rather than recycling or reuse of a wanted material. This mistaken characterization stems from the term used to identify the material destined for beneficial use. Under the draft rules, "beneficial use" is defined as "the legitimate use of a select waste as an ingredient or product in a manner that contributes to a manufacturing process or product, that does not constitute disposal or cause pollution of any waters of the state." Notably, Ohio EPA replaced the term "industrial byproduct," which was used to identify the subject material in the June 2012 early stakeholder outreach, with "select waste" in the draft rules.

The consequences of this characterization are two-fold: (1) the treatment of byproduct material from oil and natural gas production operations as a "waste" raises Ohio Department of Natural Resources (ODNR)-Ohio EPA jurisdictional issues, and (2) the Association, and other industries, will be discouraged from pursuing beneficial use alternatives to landfill disposal. While the draft rules provide an exclusion for materials generated from oil and gas exploration and production operations (see, OAC 3745-599-05(Q)), the Association understands that this provision was intended to exclude only materials managed on-site that are under ODNR jurisdiction. Yet, that fails to recognize ODNR's ongoing jurisdiction for off-site use as well. For example, drill cuttings, in addition to being managed at the well site where they are generated, can and are successfully used at other well sites (for fill material, for example). These practices historically have been regulated by ODNR under ORC 1509.02 (granting ODNR sole and exclusive authority to regulate oil and natural gas production operations). As drafted, the beneficial use rules cast too broad of a jurisdictional net, and would impermissibly treat all oil and natural gas

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byproduct material as a waste subject to regulation by Ohio EPA as soon as it leaves the well site.<sup>2</sup>

Further, the Association believes that a mistaken characterization of beneficial use material as a waste could result in the creation of additional and potentially more stringent rules for disposal, thereby discouraging industry from pursuing acceptable beneficial use alternatives to landfill disposal. A Beneficial Use Regulatory Program with reasonable standards and implementation procedures will encourage the beneficial use of drill cuttings and other qualifying byproduct material that would unnecessarily consume landfill capacity. This type of beneficial use program is strongly supported by the Association.

Consistent with the above comments, the Association offers the following suggestions to revise the definition of “beneficial use” and replace “select waste” with a term avoiding the inherent involvement of the term “waste”:

1. Revise the definition of **beneficial use** to mean – the legitimate use of a “**byproduct material**” as a raw material substitute in manufacturing, construction material, clean fill, fuel, or in agronomic utilization that does not constitute disposal, does not adversely affect human health or the environment, and is approved by the Director.
2. Replace “select waste” with “**byproduct material**” defined as – a material that has been recovered or diverted from a waste stream for purposes of beneficial use, recycling, or reclamation, a substantial portion of which is consistently used in the manufacture of products which may otherwise be produced from raw virgin materials. Byproduct/beneficial use material is not solid waste. However, byproduct/beneficial use material may become solid waste at such time, if any, as it is abandoned or disposed of rather than beneficially used, whereupon it will be solid waste with respect only to the person actually abandoning or disposing of the material. Byproduct/beneficial use material may be material that has been or is processed such that the material possesses properties that are necessary or preferred for beneficial use. Processing activities include, but are not limited to, extraction or separation of component materials, cleaning, or grinding.

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<sup>2</sup> The Association notes that Ohio House Bill 59 (HB 59), as proposed, would clarify this issue in large part, maintaining ODNR’s sole and exclusive authority with respect to these matters.

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*B. The Association Supports the Development of a General Permit for the Beneficial Use of Byproduct Material from Oil and Natural Gas Production Operations*

In its initial comments, the Association supported the creation of a general permit for drill cuttings associated with the horizontal component of the wellbore as an appropriate method to facilitate the responsible reuse of drill cuttings that meet prescribed criteria or thresholds.<sup>3</sup> After reviewing the draft rules and attending Ohio EPA's Beneficial Use Stakeholder Meeting, the Association believes Ohio EPA is moving in the right direction regarding the development of a general permit program and would be available to work with the agency directly in the development of a Beneficial Use General Permit for the Beneficial Use of Byproduct Material from Oil and Natural Gas Production Operations.

The Association's participation in the development of a general permit is critical as several aspects of an industry specific beneficial use general permit, such as assigning responsibility between the generator and end user of the material to be beneficially used, waste characterization, and establishing treatment and stabilization standards prior to beneficial use, require detailed knowledge of the industry's operational and technical complexities. The Association, through its individual members, possesses this knowledge and requests that Ohio EPA utilize this expertise to develop and implement a General Permit for the Beneficial Use of Byproduct Material from Oil and Natural Gas Production Operations.

**III. Conclusion**

The Association supports Ohio EPA's intention to develop a Beneficial Use Regulatory Program for the responsible reuse of certain byproduct material. In this connection, the Association respectfully requests that Ohio EPA revise the definition of "beneficial use" and use the term "byproduct material" to address the mistaken characterization of beneficial use as a type of disposal. Further, the Association and its members offer their support to Ohio EPA in developing a functional program, particularly a General Permit for the Beneficial Use of Byproduct Material from Oil and Natural Gas Production Operations, that encourages the safe and economic beneficial use of qualifying byproducts that might otherwise be disposed of in solid waste landfills.

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<sup>3</sup> The Association reiterates that, historically, drill cuttings have been successfully reused in a number of different ways including road spreading, clean fill material, construction material, plugging abandoned wells, landfill cover, and wetlands restoration. Some, or all, of these existing beneficial uses of drill cuttings should be considered in developing a General Permit for the Beneficial Use of Byproduct Material from Oil and Natural Gas Production Operations.

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Very truly yours,



Gregory D. Russell  
On behalf of the Ohio Oil and Gas Association

GDR/rde  
Encl.

cc: John Schierberl, Ohio EPA w/encl.  
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**Exhibit A**



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September 21, 2012

**DELIVERY VIA REGULAR U.S. MAIL AND E-MAIL**

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Re: *Initial Comments of the Ohio Oil and Gas Association - Early Stakeholder Outreach: Beneficial Use Regulatory Program Development*

Dear Ms. Braun:

In June 2012, Ohio EPA released a conceptual framework paper for a Beneficial Use of Industrial Materials Regulatory Program, requesting comments from interested stakeholders. The Ohio Oil and Gas Association (Association), on behalf of itself and its members, is pleased to submit these initial “early stakeholder response” comments on the Ohio EPA concept paper, as requested. The Association thanks Ohio EPA for this opportunity and looks forward to assisting in the further development of a Beneficial Use Program for Ohio.

**I. Introduction**

The Association is one of the largest and most active state-based oil and natural gas associations in the country and has served as the representative of Ohio’s oil and gas producing industry since 1947. Its over 2,600 members are involved in all aspects of the exploration, development, production and marketing of crude oil and natural gas resources in the State of Ohio. Because of the small size of many of the Association’s members, they often rely on the Association as their primary source of information on industry trends, activities, tax changes, legislation and regulatory matters. The Association also serves to protect its members’ interests by participating in federal and state regulatory actions involving the crude oil and natural gas industry.

Ohio is experiencing a resurgence of economic energy activity today, due in large part to the development of the Marcellus and Utica Shale. The Association believes the continued

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development of these natural resources can be accomplished in a manner that is efficient and effective, while being protective of our natural environment and human health. It is in that spirit that the Association submits these comments.

## **II. Initial Comments**

### *A. A Beneficial Use Program Will Benefit the Oil and Gas Industry and State of Ohio*

The Association supports the overall concept of a Beneficial Use Regulatory Program for industrial byproduct materials that otherwise would be considered a solid waste and need to be disposed of in a regulated landfill.<sup>1</sup> A beneficial reuse program could have a positive impact on the oil and gas industry, particularly with respect to drill cuttings. In general, drill cuttings are primarily naturally occurring materials removed from a borehole during the drilling process and can contain, for example, anhydrite, calcite, chalk, chert, clay, dolomite, feldspar, glauconite, granite, gypsum, hematite, iron, kaolinite, lime, marlstone, mica, mudstone, pisolite, pyrite, quartz, sand, sandstone, shale, silica, silt and sulfur. Under Division of Oil and Gas Resources Management regulations, drill cuttings can be (and have historically been) properly disposed of on-site in Ohio. However, the preferred method of disposal for many (but not all) large horizontal shale operators is by landfill, which can unnecessarily consume landfill capacity when safe and responsible reuse alternatives are available. A Beneficial Use Regulatory Program that establishes reasonable standards for allowing qualifying forms of drill cuttings that are already considered to be solid wastes to be reused is strongly supported by the Association.

The three-tiered approach being considered seems reasonable. Tier 1 would be for beneficial uses that have the least environmental or human health risks, and would be “pre-approved”. Tier 2 uses would be approved via a stream-lined general permit, perhaps with the submission of a Notice of Intent to be Covered/Permit Application. The materials under a Tier 2 general permit may need some physical characterization data for the application/notice of intent, and some use specifications that would be included in the general permit issued in response to the application/notice of intent. Tier 3 would be reserved for individual customized permitting of materials that do not qualify for either Tier 1 or Tier 2 approval, but are still appropriate materials to consider for beneficial re-use. The tiered approach allows for a reasoned program that increases the level of regulation as the risk to the environment and human health increases. We think this approach, as a conceptual matter, is workable and should be considered further.

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<sup>1</sup> The Association understands the proposal to involve only industrial byproducts that are already considered waste materials over which Ohio EPA has jurisdiction, and does not understand the proposal to involve – and does not support – an expansion of that jurisdiction through this rulemaking.

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B. *Classification of Vertical Drill Cuttings as Not a "Solid Waste"*

As a preliminary matter, the Association believes that it is important for Ohio EPA to clarify under current law whether certain drill cuttings are classified as "solid waste." Horizontal well drilling can be viewed in two components, the vertical (or tophole) portion and the horizontal (or lateral) portion. The vertical portion, similar to a conventional vertical well, is typically drilled using air, while the horizontal portion, including the "curve," typically also involves use of a drilling mud. It is the Association's understanding that Ohio EPA does not classify drill cuttings associated with the vertical portion of the wellbore (down to relatively 6,000 feet) as "solid waste," due to the fact that drilling operations for the vertical portion of a wellbore do not include drilling mud containing chemicals or other contaminants of concern. The Association believes that Ohio EPA should continue this understanding when drafting beneficial use guidelines, policies rules, or standards. As a result, drill cuttings from a vertical wellbore should not be regulated as a "solid waste" and can continue to be re-used wherever appropriate, and would not fall under a regulated beneficial use tier. On the other hand, the Association understands that Ohio EPA may consider drill cuttings associated with the horizontal component of a wellbore containing contaminants to be a "solid waste" and thus properly included in a beneficial re-use program at the appropriate tier level – which is discussed below.

C. *Existing Re-use of Drill Cuttings*

Historically, drill cuttings have been successfully reused in a number of different ways, such as:

- Road Spreading – Drill cuttings act to stabilize road surfaces that are subject to erosion.
- Clean fill material.
- Construction Material – Drill cuttings have been used in road pavements, bitumen, and asphalt, and cement manufacture.
- Plugging Abandoned Wells.
- Landfill Cover.
- Wetlands Restoration.

Some, or all, of these existing beneficial uses of solid waste drill cuttings should be considered under a Beneficial Use Program. There may be other uses for drill cuttings, and we welcome the opportunity to work with Ohio EPA to develop appropriate and reasonable standards for the reuse of drill cuttings that are appropriately classified as "solid waste." Some of these uses may even be appropriate for Tier 1 "pre-approval" of solid waste drill cuttings under the Ohio EPA three-tiered approach.

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D. *General Permit for Solid Waste Drill Cuttings Containing Contaminants*

In the June 2012 concept paper, a “general permit” would be used for those industrial byproducts not qualifying for preapproved Tier 1 use and needing some physical characterization, while not requiring a full blown individual “custom” permit. The Association believes that the creation of a general permit for drill cuttings associated with the horizontal component of the wellbore is an appropriate regulatory method to facilitate the responsible reuse of drill cuttings that meet prescribed criteria or thresholds.

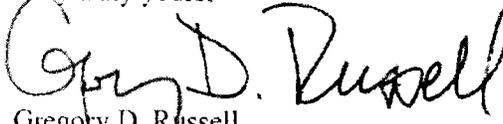
For example, when a drilling mud is used to drill a well, the solid waste drill cuttings may need to be cleaned, treated or remediated in some capacity in order to meet pre-determined criteria for the specific intended use (e.g., subsequent to using a saltwater-type mud, the cuttings may need to be washed to remove dissolved salts prior to beneficial use as road stabilization/erosion control). Similarly, some cuttings may need to be thermally treated to remove residual hydrocarbons to meet appropriate standards for reuse in construction materials. These types of common recurring uses of the solid waste drill cuttings would be appropriately handled under a stream-lined general permit. The Association looks forward to working with Ohio EPA to develop an acceptable general permit for appropriate solid waste drill cuttings, including providing characterization and reuse data and developing reasonable treatment and stabilization standards for certain solid waste drill cuttings prior to reuse.

**III. Conclusion**

The Association supports Ohio EPA’s intention to develop a Beneficial Use Regulatory Program for the responsible reuse of industrial byproducts. In this connection, the Association respectfully requests that Ohio EPA continue to not consider clean drill cuttings associated with the vertical component of the wellbore as “solid waste.” The Association and its members offer their support to Ohio EPA in developing Beneficial Use Concepts into a functional regulatory program, including developing a general permit, and particularly in the context of solid waste drill cuttings associated with the horizontal component of the wellbore.

Michelle Braun  
September 21, 2012  
Page 5

Very truly yours,

  
Gregory D. Russell  
On behalf of the Ohio Oil and Gas Association

GDR/zms

cc: John Schierberl, Ohio EPA  
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### *Comments on Beneficial Use of Gas Drilling Radioactive Wastes in Landfill Cover*

These comments offer a specific suggestion: please exclude from permissible use under OEPA solid waste “general permits” three categories of wastes: (1) the shale gas vertical drill cuttings, (2) the shale gas “refined oil base” – impacted lateral drill bore cuttings, and (3) the radium sulfate sludge/residues that form on the bottom of wellhead waste water ponds after flowback from gas fracking operations. These three items should not be permitted to be used as daily cover at municipal solid waste landfills and construction and demolition waste landfills.

You as career professionals understand that dilution is not the solution to pollution.

We as local elected officials understand that the Oil & Gas Association lobbyists were successful in amending ORC 1509.02 to block our communities from legislating a direct ban on “oil and gas wastes”. That legislative maneuver was unfair and unreasonable, a direct slap at home rule principles to favor one industry, but it ties our hands, so we depend on you to protect us, as career state officials should.

Please view “beneficial” as a derivative of “benefit” and look first and foremost at the “benefit” to residents living near the landfill in which the radwaste would be dumped.

We recognize industry will beg you to relax regulatory controls on the costs of disposing of waste; their economics should be simple to understand. The cheap disposal as landfill “daily cover” that contains radioactive waste represents a financial “benefit” to the owners of 2,250 Ohio well pads operating or planned for much of the Marcellus Shale and the Utica Shale. These primary investors in Ohio shale “plays” are Statoil SA of Norway, Total SA of France, and CINOOC of Beijing, China, national sovereign wealth entities that work through Chesapeake, Shell and other intermediary leasing and drilling operators. The actual drillsites are run by “fronts”, thinly-capitalized Delaware LLC companies which can easily disappear if problems and potential waste liabilities arise. Their savings in avoided future cleanup costs are huge if they win an OEPA general permit that allows radwaste into local landfills. We must note that France and Norway require their waste generators to take responsibility for driller waste costs, but sadly, Ohio does not. The savings of these investors results in a major capital “benefit” to investors, but because the end product (gas) of rapidly depleted shale wells is intended to be shipped to China and Europe as exported LNG, there is no long term fiscal benefit to Ohio residents. As the familiar sign in gift stores says, “If you break it, you own it!” But the Kasich administration refuses to attribute the full costs to the gas fracking drillers. So those investors who break 2,250 wellheads in Ohio refuse to “own” their waste. Don’t help them get away with that callous disregard of the health of Ohioans via a general permit allowing radwaste into our MSW landfills.

More specific “benefit” claims you should consider are those for local water users, local downwind residents and local taxpayers who bear remedial costs after abandonment of a solid waste site. We need to have assurance that radwaste will not migrate from dusts and leachate into our local environment; you have the ability to deny “general permit” status

as a blessing to their proposed radwaste landfill use. You have the ability to compel the future specific PTI and PTO applicants to establish a “financial responsibility” bond or trust for the future remediation costs at the contaminated site. Please use your tools.

You are already aware that gas lobbyists won an exclusion of their waste from Superfund, and SDWA and CAA exclusions and exceptions have immunized their operations from the costs that normal industries must bear. The 1983 delegation to ODNR of US EPA RCRA Class II UIC well disposal control means that millions of gallons of waste have flooded into poorly supervised wells in our state as a result of Ohio’s persistently lax regulation of injection wells. Region V is now reconsidering the consequences for the environment of that past delegation of power. We hope that YS EPA safety standards will soon displace the under-funded, poorly managed ODNR.

We urge OEPA to exclude from “beneficial use” consideration those wastes that bring radioactive material into our landfills, streams, and downwind neighborhoods, specifically excluding from that special status (1) the vertical drill cuttings, (2) “refined oil base” – impacted lateral drill bore cuttings, and (3) the radium sulfate sludge/residues that form on the bottom of wellhead waste water ponds after flowback from gas fracking operations. A specific PTI/PTO proceeding with 30 days advance notice to the local and county governments should put the burden on the driller to justify the radioactivity level and other biochemical leachate and airborne attributes of the proposed disposals. Especially for concentrated sludge residues from the wastewater ponds, the proper laboratory characterization of the radiation levels at multiple places within the waste zone is an essential prerequisite to each individual permit application. Ideally, the permit applicant should be required to demonstrate its financial responsibility for its contribution of radwaste to the waste site; there should be no “orphans” conceived by the drilling industry. What matters for our residents is “benefit” to their safe environment.

Thank you for your consideration.

Disclaimers: These personal views are not necessarily reflective of policy positions of the City Council of Wyoming, Ohio, the First Suburbs Consortium of Southwest Ohio, the Executive Committee of the OKI Regional Council of Governments, the Division of Public Health Science of the College of Medicine of the University of Cincinnati, or other organizations with which I am affiliated. More details on the background can be found in my textbooks, *State & Local Government Solid Waste Management 2d Ed.*, *Superfund & Brownfields Cleanup 2013 ed.*, *RCRA & Superfund Practice Guide 2d Ed.* and *Toxic Torts Practice Guide 3d ed.*

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June 11, 2014

Attn: Michelle Braun  
State of Ohio  
Environmental Protection Agency  
Post Office Box 1049  
Columbus, Ohio 43216-1049

**RE: Early Stakeholder Outreach  
HB 59 - Beneficial Use of Material from a Horizontal Well that has come  
in contact with refined oil-based substances that is not TENORM**

Ms. Braun,

This correspondence has been prepared on behalf of Ohio Soil Recycling, LLC and Shale Recycling, LLC (a joint-venture of Environmental Management Specialists, Inc. and Ohio Soil Recycling, LLC) in response to Ohio EPA's, May 13, 2014, Early Stakeholder Outreach Fact Sheet pertaining to House Bill 59 - Beneficial Use of Material from a Horizontal Well that has come in contact with refined oil-based substances that is not TENORM. Per the request of the Ohio EPA, our below input is provided in general comments and then also in specific response to items presented in the Fact Sheet for which OEPA seeks input.

Please note that our interests at this time lie solely in drill cuttings generated from oil and gas drilling operations and the below comments are specific to drill cuttings only. Ohio Soil Recycling, LLC currently holds an IAWMP authorization to accept drill cuttings for bioremediation treatment and subsequent beneficial reuse at our Columbus, Ohio facility and is actively pursuing locating future facilities for this purpose in eastern Ohio through the Shale Recycling, LLC joint-venture.

### **General Comments**

#### **I. Drill Cuttings as NORM and not TENORM – Facility Sampling Requirement:**

It has been our experience from radiological data presented to us by the oil and gas industry, and those knowledgeable in the area of radioactive materials, as well as radiological analyses performed by our organization that drill cuttings generated during oil and gas drilling operations do not present levels of radioactivity that present a concern for human health or the environment. While this assessment has also been accepted by the State of Ohio by statutory definition, Ohio Soil Recycling, LLC (OSR) is still required by permit to perform periodic radiological analysis of drill cuttings received at our facility.

This structure presents the potential for confusion, risk and additional expense to our

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organization and the industry. In the event that a given sample of drill cuttings delivered to our facility results in a radiological result in line with those deemed to be TENORM, the drill cuttings would then need to be removed from our facility and shipped to an acceptable TENORM waste disposal facility. The issues with this approach are:

1. Current radiological analytical procedures can take as long as 30 days for final results. This would lead to TENORM material being located at a facility permitted only for NORM material for potentially 30-45 days before being shipped to an appropriate disposal facility.
2. Having TENORM material stored at a NORM permitted facility presents increased danger for the facility employees.
3. Additional shipping and handling fees are incurred by either the disposal facility or the oil and gas producer for further transport of the material to a TENORM disposal location.

Our recommendation to address this issue is to either (1) require any radiological analysis that is mandated be performed on-site at the well pad with results being presented prior to shipment, or (2) remove the requirement for radiological analyses as the material is already deemed NORM by statutory definition.

If radiological analysis continues to be required in permit, we have been presented with several recent technologies that allow for faster turn-around times for radiological analyses, thus storage of material at the well-pad can become less of a time and space sensitive issue. It is our opinion that sampling and analysis at the well pad makes far greater sense than after-the-fact sampling and analysis that could potentially lead to increased costs and potential risk to health and safety. This approach would be more in-line with the standard methods used to characterize and classify other environmental waste streams (i.e. – characterization and classification prior to transport and disposal).

It would be our preference to see the requirement for sampling removed from facility permits completely as drill cuttings have been deemed NORM by statute. Internally, OSR and Shale Recycling, LLC will continue to maintain at-the-gate radioactivity screening for incoming drill cuttings loads. This will continue to be performed in the interest of employee health and safety as well as to ensure that in the unlikely event that a waste that may be TENORM is accidentally comingled with drill cuttings at the well pad before shipment it can be identified and returned for proper classification and disposal.

## **II. Permitting of Future Remediation / Beneficial Reuse Facilities**

Ohio Soil Recycling, LLC underwent a lengthy and rigorous permitting process to obtain the current IAWMP authorization specific to our Columbus, Ohio facility. Due to the relatively new and unknown nature of the industry and the drill cuttings waste stream, the longer than usual permitting timeframe was understandable and expected. This permit however was obtained at great effort and expense on the part of our organization.

Since receiving our permit, ODNR has released “Guidelines for Waste Substance Facilities” providing means of obtaining a Chief’s Order through an “Application to Operate a Facility” form. In certain cases, Chief’s Order authorizations have been issued in as little as a week following submittal of an Application. One such case included the placement of drill cuttings with residual oil-based substances for fill following only amendment with cement, lime or a similar agent.

OSR and Shale Recycling, LLC have been in communication with ODNR and OEPA regarding permitting of our future facility(s) for the purpose of remediation and beneficial reuse of drill cuttings. In the last week, discussion with ODNR on this topic resulted in guidance that future facilities may not be permitted to include treatment and disposal on the same parcels as treatment is regulated by ODNR and disposal by OEPA. **Based on the significant investment we have made to date in OSR and Shale Recycling, LLC, and in consideration of our future facility plans as well as those of others, we would request as part of this comment opportunity that ODNR and OEPA work together on this topic to ensure that viable, positive, environmentally sound and potentially cost-saving remediation and disposal/reuse technologies are not restricted from activity in Ohio due the structure and overlap of ODNR and OEPA permitting approach and authority.**

In addition, it would be our hope and expectation that future permitting whether performed by OEPA or ODNR will include that same level of oversight and examination as OSR experienced in obtaining our current IAWMP authorization. Based on our research of treatment technologies that have been permitted and operational in other states with more advanced horizontal drilling markets, there is an array of remediation approaches that have been presented. Without a clear regulatory permitting structure for facilities, and a thorough means of evaluation, the State could potentially risk permitting an approach that is not environmentally sound, thus bringing the health and safety of Ohio citizens and resources in jeopardy.

### **Response to Specific Outreach Input Items**

#### **1. Regulatory Framework Proposed / Alternative Framework?**

It is our opinion that the proposed regulatory framework is appropriate and would provide a clearly defined path to permitting as well as a more clear definition of expectations, timeframes and structures for those considering a given disposal / reuse opportunity. As noted above, it is our position that on the facility side a critical element is well-defined, common sense roles for OEPA and ODNR in permitting. As OEPA is comprised of more technical staff experienced with waste disposal facilities, it would seem to be more appropriate for OEPA to regulate and approve treatment and remediation. Almost all treatment and remediation approaches involve some form of air and/or stormwater emissions requiring permits from OEPA, therefore providing oversight of off-site treatment facilities to ODNR seems to invite the opportunity for overstep and environmental safeguards to be ignored.

#### **2. Options for improving an identified concept?**



During our IAWMP permitting process we accepted drill cuttings loads at our facility in a controlled environment for a 6-month long pilot study in which we demonstrated our ability to remediate heavy petroleum hydrocarbon impacted ROBS drill cuttings to levels below the Ohio VAP residential standards. The pilot study approach is an excellent means of vetting proposed new technologies and entrants to the market during the permitting process. Likewise, a streamlined pilot study approval process would provide a suitable means for testing methods of improving an identified concept. It is our opinion and experience that the requirement to perform a pilot study in coordination with the Ohio EPA is a valuable tool in the permitting process and it is our position that it would be wise to require a pilot study for all proposed treatment and beneficial reuse methods.

**3. Information to be aware of when developing program concepts or rule language?**

OSR identified numerous treatment approaches for ROBS drill cuttings, both proposed and currently in use, in other states with more developed horizontal drilling markets during the research and development of our technology. A common theme across those states was the permitting of at least one facility or treatment approach that was unsuccessful and resulted in large amounts of impacted materials being located on a site resulting in at best financial impact to the state and/or the land owner, and at worst significant adverse impact to the environment. OSR encountered numerous examples of facilities utilizing a surfactant to remove petroleum hydrocarbons from drill cuttings with no controls in place for the final disposition for the contaminants in solution resulting in impact to nearby waterways. As Ohio's oil and gas development through horizontal drilling grows, it is safe to expect the same types of partial treatment approaches will be presented to the OEPA. Discussions with regulators in states with more developed markets specific to the lessons learned from "bad actors" that have been encountered regarding treatment and beneficial reuse disposal would likely assist OEPA in developing best practices for Ohio.

**4. Would this regulatory program have a positive impact on your business?**

Yes, it is our opinion that any clearly stated and defined regulatory approaches can only help ensure that Ohio continues to only permit safe, environmentally sound treatment and disposal / reuse technologies and facilities. It is our position that some entities that do not meet the above requirements have already been authorized through the ODNR Chief's Orders process and any clarification of regulatory body roles and areas of oversight in regard to beneficial reuse would be greatly welcomed.

**5. Would this regulatory program have an adverse impact on your business?**

As the first permitted facility for treatment and beneficial reuse of drill cuttings in Ohio, new regulatory structure and requirements could potentially have an adverse impact on our business if new or additional permitting requirements are imposed. This would include any future facilities we have planned utilizing the same technology as already approved. It has been our understanding that the lengthy and arduous permitting process OSR underwent to receive our initial permit would not need to be experienced again for future facilities using the same technology, design and safeguards. New permit requirements would cause OSR and Shale



Recycling, LLC to incur additional and unexpected expenses resulting from additional compliance efforts.

Ohio Soil Recycling, LLC would like to thank you for the opportunity to provide input through OEPA early stakeholder outreach. Your consideration of the above comments and input is greatly appreciated. If you have any questions or require additional information, please do not hesitate to contact me anytime.

Sincerely,

Ohio Soil Recycling, LLC

A handwritten signature in blue ink, appearing to read "C. J. Elliott", is written over a faint, illegible printed name.

Christian J. Elliott  
President



June 16, 2014

Ms. Michelle Braun  
Ohio Environmental Protection Agency  
P.O. Box 1049  
Columbus, Ohio 43216-1049

RE: Early Stakeholder Input – Beneficial Use of Material from Horizontal Well that is not TENORM  
May 13, 2014

Dear Ms. Braun,

On behalf of Waste Management of Ohio, I thank you for the opportunity to provide comments on the fact sheet entitled, “Early Stakeholder Outreach - Beneficial Use of Material from a Horizontal Well that has come in contact with refined oil-based substances that is not TENORM issued in May 2014.” We understand the agency may adopt rules to govern these materials and is seeking input on the type of materials that may be applicable for beneficial use as well as any suggestions or comments related to program development. We are aware of a number of materials being generated during the drilling process and agree it is appropriate for the agency to seek information as well as coordinate their review with the other agencies authorized to regulate these materials including the Ohio Department of Natural Resources (ODNR) and Ohio Department of Health (ODOH).

We believe solid waste landfills have a long history in Ohio providing environmentally sound disposal. These facilities have undergone comprehensive regulatory review and permitting including meeting extensive siting criteria, specific design and construction standards and have routine oversight of our operations as well as assuring the facilities complete on-going monitoring, closure and post-closure care and have financial assurance mechanisms in place to provide appropriate funding for long-term care. Finally, funding sources for Ohio EPA to review sites, issue permits and conduct inspections are in place assuring the drilling materials have the necessary oversight and controls in place. In developing beneficial rules for these materials, we recommend that a similar type of regulatory program and oversight be developed to assure proper testing, facility review and specific authorization for a beneficial use be permitted.

The fact sheet proposes one approach being considered is to review case specific material, the proposed beneficial use and the location of the use, similar to the authorization under the Integrated Alternative Waste Management Program (IAWMP). This approach has been thorough and assures appropriate air, surface water and use considerations. As Ohio generates more of this material this specific type of review seems appropriate when considering alternatives.

We suggest that any new rules developed recognize and continue to authorize the environmentally sound and beneficial re-use of materials at solid waste disposal facilities. As noted above, solid waste disposal facilities have undergone extensive review and evaluation through permitting and are highly regulated with routine inspections by the agency. When developing any beneficial use rules these concepts should recognize,

perhaps thru a generalized permit section the management of specific uses, such as cover at landfills when alternatives to disposal are proposed.

The following list summarizes some additional questions for consideration:

- 1) What is the definition of “refined oil-based substances”?
- 2) Will Ra-226/Ra-228 levels drive potential beneficial use options?
- 3) Will regulatory requirements for mixing or purposeful dilution of horizontal material above the 5 pCi/g threshold be discussed?
- 4) How is horizontal well material determined to “not be TENORM”?
- 5) Will laboratory testing to identify specific “refined oil-based substances” in the material be required? What standards will need to be met? How will any need for treatment be determined?
- 6) Will testing and treatment be based on the type of beneficial use being considered?
- 7) Will a generator be responsible for determining whether “horizontal well materials is TENORM or not? How is the determination made in the field?
- 8) Does a generator need to provide process flow documentation for each horizontal well?
- 9) What sampling protocol and frequency is the agency considering adequate to determine horizontal well material is characterized for beneficial use consideration?
- 10) What type of beneficial uses is being considered?
- 11) What treatment options are being considered?
- 12) Since drill cuttings coming into contact with refined oil-based substances can be disposed as a solid waste (assuming they meet analytical requirements) what additional permitting requirements are being considered for staging materials or any treatment at landfills?

I thank you for the opportunity to comment on this early stakeholder outreach. Please do not hesitate to contact me at your convenience.

Sincerely,

Waste Management



Kathryn A. Trent  
Director Government Affairs

Cc: Pam Allen, Chief DMWM