

Anderson County Board of Commissioners  
**Intergovernmental Committee**  
**Minutes**

**October 12, 2020**

**Members Present:** Shain Vowell, Catherine Denenberg, Tim Isbel, Bob Smallridge and Denver Waddell

**Members Absent:** Tracy Wandell

**Others Present:** Terry Frank, Jay Yeager, Robert Wilkinson

**Call to Order:** Chairperson Denenberg called the meeting to order.

Commissioner Wandell made a motion to approve the July minutes. Commissioner Isbel seconded the motion. Motion passed.

Commissioner Isbel made a motion to nominate Commissioner Denenberg as Chairperson. Commissioner Vowell seconded the motion. Motion passed by acclamation.

**TVA's transportation of dirt for "covering in place" of coal ash**

Discussion. No Action Taken

**Excessive truck traffic, wear on roads, where is dirt coming from**

Discussion. No Action Taken.

**TDEC Letter Dated August 5, 2020**

Discussion. No Action Taken.

**New Business**

None

**Old Business**

None

**Adjournment**

With no further business the meeting was adjourned.



**STATE OF TENNESSEE  
DEPARTMENT OF ENVIRONMENT AND CONSERVATION  
NASHVILLE, TENNESSEE 37243-0435**

**DAVID W. SALYERS, P.E.**  
COMMISSIONER

**BILL LEE**  
GOVERNOR

August 5, 2020

Via Email (.pdf) & U.S. Mail

The Honorable Terry Frank  
Anderson County Mayor  
100 N. Main Street, Room 208  
Clinton, TN 37716-3617

**RE: Additional Sampling – Response to Request for Guidance**

Dear Mayor Frank:

Thank you for allowing Tennessee Department of Environment and Conservation (TDEC) representatives to attend and provide information at the July 20<sup>th</sup> meeting of the Anderson County Commission. We appreciate the interest of the Commissioners concerning the TDEC's investigation and clean-up of Coal Combustion Residuals (coal ash) at the TVA Bull Run Coal Fired Power Plant site (Bull Run site). We also appreciate the opportunity to provide guidance to Anderson County as you consider having samples taken in the local community. TDEC continues to support the County's efforts to conduct its own independent sampling and analysis.

We understood the initial scope of the County's independent sampling was sampling and analyzing coal ash at the Bull Run site. During the July 20<sup>th</sup> Anderson County Commission meeting, the scope of sample collection broadened and now includes sampling soil from local homes and water samples from spigots at private residential properties near the Bull Run site. Several Commissioners expressed reservations about this change of circumstances and requested that any decision regarding how and whether to conduct sampling be presented to the entire Commission for further consideration.

You recently forwarded to us a draft contract between Anderson County and Duke University (Contractor). Typically, sampling and analysis plans are very detailed. The draft contract has a one

paragraph attachment describing the scope of work to be performed:

Below is a summary of the work to be performed. I hope that this is what you need.

Duke University PhD students Rachel Coyte and Zhen Wang will travel (separately) to Anderson County to conduct water, soil and home dust sampling from about 30 homes located near Bull Run coal plant. A list of homeowners that will participate in this study will be generated jointly with Commissioner Catherine Denenberg. Prior to the arrival, the PhD students will contact the homeowners by the phone/email to confirm that they agree to be part of the study. Duke students will also ask homeowners to provide a bag of their home dust as collected in the home vacuum cleaner. During the sampling, Duke students will collect water samples directly from the well and/or outside faucet as well as soil at the yard. We will ask the homeowners to provide the vacuum cleaner bag so the students will be able to pick them up. We will strictly keep social distancing and all of the sampling will be conducted outside the homes. Following the water, soil and home dust collection, we will process the samples and analyze them at Duke labs. We will measure the major and inorganic trace elements in the water, stable oxygen and hydrogen isotopes and if we find elevated levels of contaminants we will also measure boron and strontium isotopes to detect the water contamination sources. For soil we will measure the trace metals and radionuclides (radium and lead-210) distribution, and if high lead concentrations will be found, we will measure stable lead isotopes to detect the lead origin. For home dust we will measure the trace metals distribution and if needed also stable lead isotope ratios. Once the data will be generated we will report the results to each of the homeowners that were part of the study including the implications of the results (e.g., if the water quality exceeding state and national drinking water regulations). We will provide a short report to the Commissioner Catherine Denenberg with the results, implications, and recommendations for next stage of research if needed.

Best regards,  
Avner

TDEC understands from the above scope of work, and a subsequent conversation with the Contractor, that the primary goal of this preliminary sampling is to determine if there are traces of historic mobilization of coal ash constituents from the Bull Run site to the surrounding community through the collection of soil, dust, and drinking water connected to onsite water wells at private residential properties. The sampling is not intended to verify data collected by TVA or TDEC as part of the ongoing investigation at the Bull Run site that the Commission originally envisioned.

At your request, and due to the shift in direction to sampling soil, drinking water and dust at private residences, this letter provides a non-exhaustive list of comments, issues, and concerns that TDEC recommends to Anderson County for further consideration:

- The Contractor was not aware that the County would require a contract. It seems unclear whether there is a "meeting of the minds" between the County and the Contractor and whether the Contractor would even be willing to accept the terms and conditions of the County's proposed contract. TDEC recommends that the County and the Contractor clearly communicate their expectations to each other in this regard.
- It seems that there is a disconnect between the Commission's initial objective and the objective in the Contractor's proposal. The Contractor indicated to TDEC that the one paragraph scope of work would not satisfy the Commission's initial objective to verify the work conducted by TVA and TDEC at the Bull Run site.<sup>1</sup> We encourage the Commission to clearly identify its

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<sup>1</sup> TDEC forwarded the video of the July 20 County Commission meeting to the Contractor. Based on multiple statements from Commissioners at that meeting, TDEC understood that the objective of the independent sampling was to verify the work conducted by TVA and TDEC at the Bull Run site. One Commissioner even summarized the objective of the independent sampling by offering President Ronald Reagan's famous "trust but verify" quote.

purpose and objectives to the Contractor. We will support the County regardless of whether its objective is to verify TVA and TDEC work, or to determine if there are historic mobilization of coal ash constituents. We just recommend that the entire Commission reach a consensus on its objective and then clearly communicate its objective to the Contractor.

- The Contractor was not aware of the comprehensive investigation being conducted at the Bull Run site by TDEC and TVA. TDEC provided an overview on the phone with Contractor, and committed to sharing data with the Contractor on current investigation activities being conducted.
- Pursuant to applicable laws, rules and orders, TDEC is required to develop and execute approved and established methodologies for the collection and analysis of environmental data. TDEC and TVA are currently conducting a robust and comprehensive investigation of the Bull Run site using these established methodologies to determine if there are any environmental impacts associated with the CCR units, and to implement appropriate remedies.
- The Contractor has the freedom to conduct research using experimental methods and geochemical tools not commonly available in certified commercial labs. The Contractor indicated that Contractor's academic research methodologies have not yet received US EPA approval and are appropriate to use in circumstances to supplement, not supplant, the more established methodologies used for regulatory cleanup activities.
- We recommend that the Commission ensure that Data Quality Objectives (DQO) for its independent sampling effort be satisfied. In this regard, the Commission could request (or require by contract) that the Contractor:
  - Provide the Commission with a Claxton area specific Quality Assurance/Quality Control Project Plan (QAPP);
  - Provide qualifications and experience of individuals conducting environmental sampling and analysis;
  - Demonstrate that the persons conducting the sampling for the Contractor received training for sample collection, preservation, and transport;
  - Ensure that proper sampling protocols are followed and documented;
  - Ensure that appropriate Quality Assurance procedures be followed (trip blanks, equipment blanks, field duplicates, etc.); and,

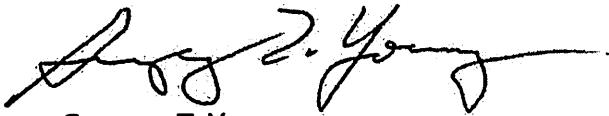
- Ensure that analysis be conducted by an Independent 3<sup>rd</sup> Party Nationally Accredited Environmental Laboratory.
- TDEC understands the sampling locations selected by the Contractor were based on an aerial photograph. Were there other factors or rationale for proposing to collect water samples from spigots at private properties?
  - Are the proposed sampling locations connected to a public water system or private well?
  - Water samples from homes with water from public water systems are not comparable to the groundwater at the Bull Run site.
  - Water samples from homes with domestic water wells are not comparable to groundwater at the Bull Run site unless the domestic water well is in the same geologic formation as the Bull Run site ground water monitoring wells.
  - Will the Contractor collect and analyze background water samples to determine levels of naturally occurring substances?
- Soil sampling locations were also apparently chosen by the Contractor based on an aerial photograph; was there any other scientific methodology or rationale?
  - Will the Contractor analyze soil samples for % coal ash to determine if there is any coal ash present on the property?
  - Has the Contractor provided soil sampling locations and depths; e.g., surface soil sampling, soil borings at different depths, etc.? Will the soil samples collected be composite or individual samples?
  - Will the Contractor collect background soil samples to determine levels of naturally occurring substances?
- Sampling the dust from vacuum bags inside homes is discussed briefly by the Contractor. Sampling inside homes is a method to determine if dust and other particulate matter is moving from outside a home or building into a home or building. Typically, professionals such as Industrial Hygienists conduct this type sampling with particular contaminants in mind and using very precise and specific instrumentation and methodologies. We are not aware of the collection of dust from vacuum bags being used in any scientifically defensible sampling event. We recommend that the Commission request that the Contractor provide the Commission with more detail regarding the expertise of personnel involved and the methodology for sample collection, preservation, and analyses to be conducted.

The Honorable Terry Frank  
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TDEC supports Anderson County moving forward with its sampling efforts in the Claxton community. Once the sampling is completed and the results are in, Anderson County will need to provide the supplemental data to the public. The key to having valid data to provide the public is to develop and implement a science based, professionally designed sample collection and analysis plan. This guarantees the information provided to the public is based on sound science and is accurate. We hope that the guidance above helps Anderson County do this.

Thank you again for this opportunity to provide input and guidance to you and the Anderson County Commission. We will continue to listen to any questions or concerns your community has for us about the Bull Run site. Please do not hesitate to contact me with any of those questions or concerns anytime.

Sincerely,

A handwritten signature in black ink, appearing to read "Gregory T. Young", with a long horizontal flourish extending to the right.

Gregory T. Young  
Deputy Commissioner, TDEC Bureau of Environment

Dr. Vengosh has received the Best Science Article Award of 2013 from *Environmental Science and Technology* for his paper titled, "Impacts of Shale Gas Wastewater Disposal on Water Quality in Western Pennsylvania." Co-authors include Nathaniel Warner (PhD, 2013) and Cidney Christie (MEM, 2013).

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Dr. Vengosh is a Professor of Geochemistry and Water Quality and Chair of the Water and Air Resources program at the Nicholas School of the Environment. He also holds appointments in our Integrated Toxicology and Environmental Health Program, as well as the Department of Civil and Environmental Engineering.

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For more information about Dr. Vengosh's work, please visit his website. You can read the paper's abstract [here](#).

## **Duke University testing shows Kingston coal ash uranium at triple report levels**

**Jamie Satterfield**

Knoxville News Sentinel....May 17, 2020

My research aims to link environmental geochemistry and isotope hydrology in order to trace the sources and mechanisms of water contamination and relationships with human health. Current research includes global changes of the chemical and isotopic compositions of water resources due to human intervention and contamination, salinization of water resources in the Middle East and Northern Africa, naturally occurring contaminants (arsenic, fluoride, boron) and radioactivity in water resources, the impact of coal combustion residues on the environment, and the impact of gas drilling and hydro-fracking on the quality of shallow groundwater.

## Recent Grants

- Collaborative Research: Tracing Coal Ash Solids in the Environment - Implications for long-term contamination of the aquatic ecosystem awarded by National Science Foundation
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- An Investigation of Elemental Coal Ash Contamination of Soils in Iredell County, NC awarded by University of North Carolina - Chapel Hill
- Distribution of uranium and thorium in coal deposits and concentrations of NORMs in coal ash in India
- Geochemical characteristics of formation water in China

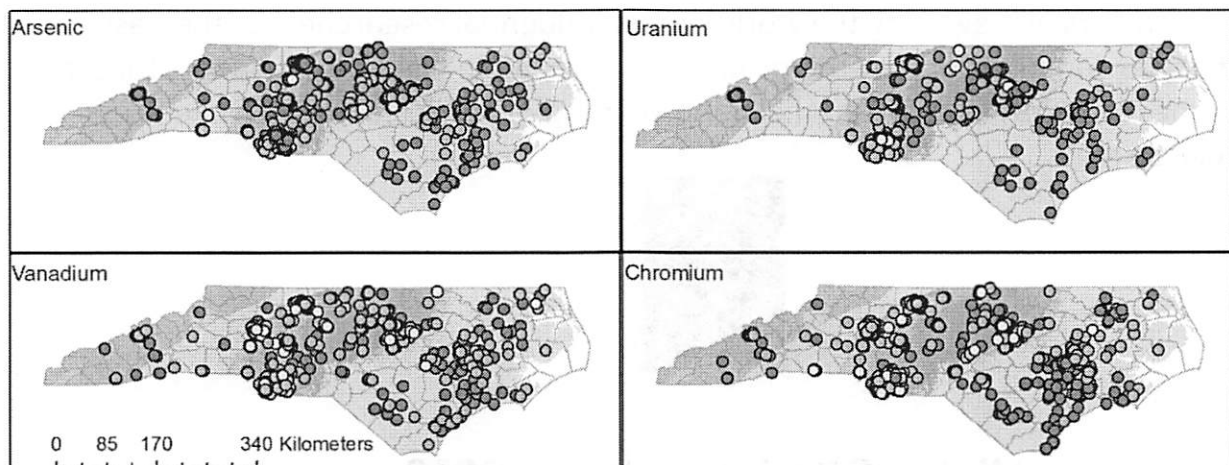
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**April 28, 2020:** Congrats to Zhen Wang, his the peer-reviewed study, "Lead Isotopes as a New Tracer for Detecting Coal Fly Ash in the Environment," which was published Oct. 16, 2019, in the journal Environmental Science & Technology Letters was receives **the 2020 Nicholas School Dean's Award for the Best Graduate Student Manuscript.**

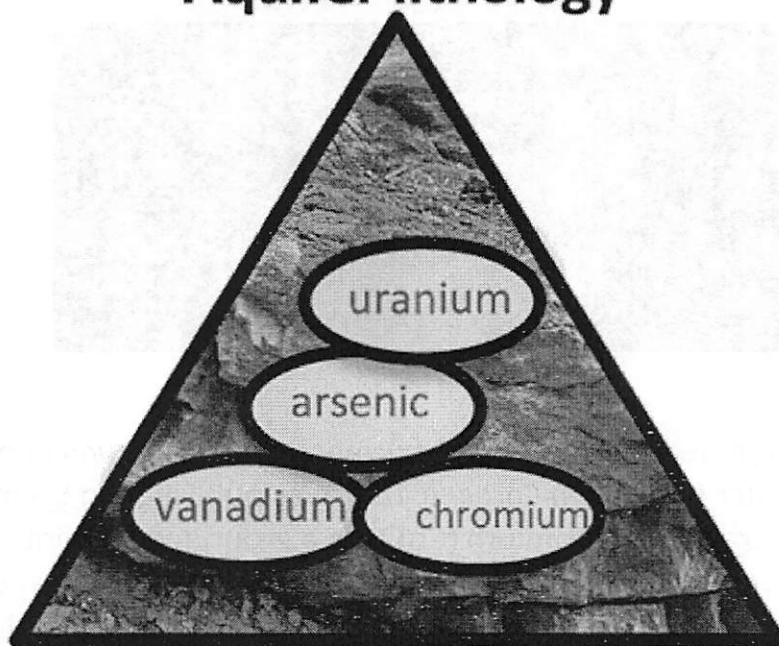
**March 13, 2020:** A new paper entitled "*Factors Controlling the Risks of Co-occurrence of the Redox-Sensitive Elements of Arsenic, Chromium, Vanadium, and Uranium in Groundwater from the Eastern United States*" was published in Environmental Science and Technology. This paper explores the co-occurrence of redox-sensitive elements of arsenic, uranium, vanadium, and chromium in groundwater across North Carolina. The highest concentrations of these elements were measured mostly in groundwater from fractured igneous and metamorphic formations throughout the Piedmont region. In addition to the local aquifer geology, the pH and redox conditions of groundwater control the occurrence of these elements. Due to similar geochemistry, vanadium and chromium co-occurred most frequently. Concentrations of vanadium and hexavalent chromium co-exceeded health recommendations from the NC Department of Health and Human Services in up to 84% of wells from the King's Mountain Belt and the Charlotte and Milton Belts of the Piedmont region. This study highlights the large gap between health recommendations and enforceable regulations and demonstrates a degree of co-occurrence between redox-sensitive elements, which may pose additional risks to groundwater-reliant individuals. See Duke press release.

**January 21, 2020:** Avner Vengosh interview to Duke University Chronicle on "*Duke Energy settlement results in the country's largest coal ash cleanup*"





## Aquifer lithology



**Geochemistry**

**Hydrogeology**

**November 19, 2019:** Avner Vengosh was named to the list of Highly Cited Researchers for 2019 that includes 54 of Duke's most prominent and influential researchers. Recognizing the world's most influential researchers of the past decade, demonstrated by the production of multiple highly-cited papers that rank in the top 1% by citations for field and year in Web of Science. See Duke press release here.



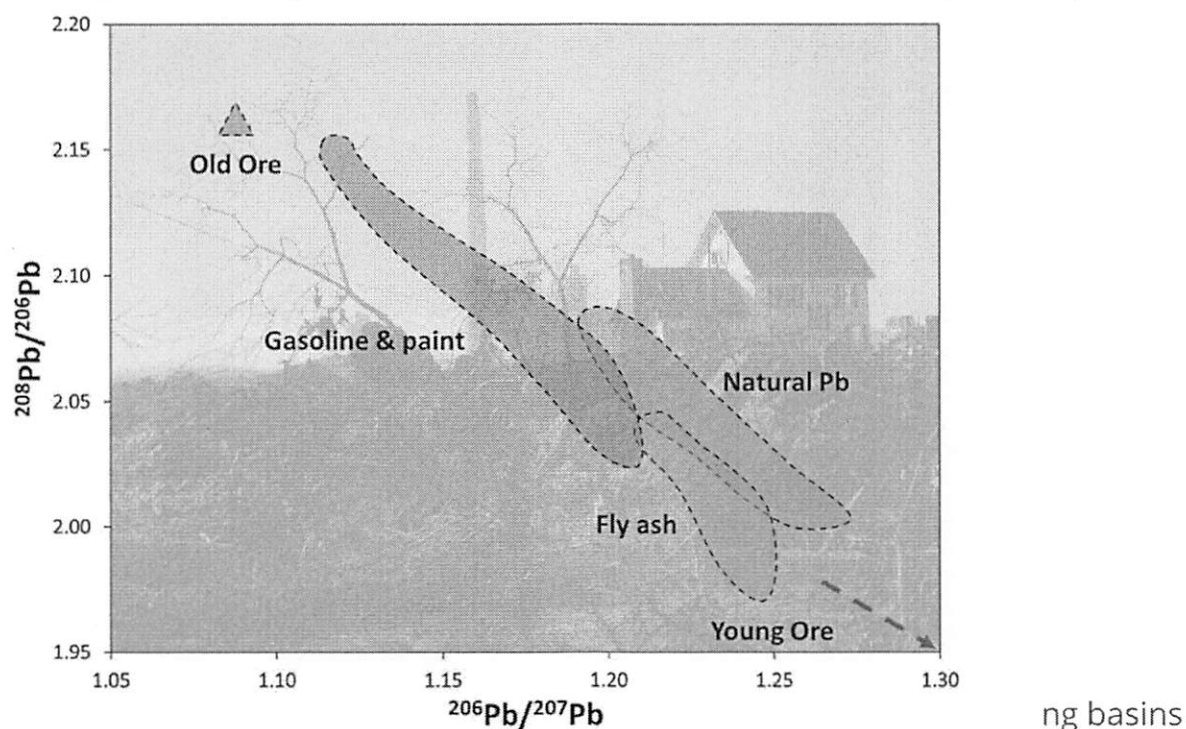
## Highly Cited Researcher 2019



**November 13, 2019:** A new paper titled "*Occurrence and distribution of hexavalent chromium in groundwater from North Carolina, USA*" was published in Science of the Total Environment. Hexavalent chromium (Cr(VI)) is a groundwater contaminant that is potentially harmful to human health. Understanding the occurrence of Cr(VI) in groundwater resources is critical for evaluating its risks to human health. This study confirms that Cr(VI) is the predominant species of dissolved Cr and that groundwater from aquifers in the Piedmont region contain significantly higher concentrations than groundwater from the coastal plain. Though there is only one exceedance of the U.S. EPA Maximum Contaminant Level (100 mg/L for CrT) in the dataset, over half of all wells measured for Cr(VI) (470 out of 865) in the dataset exceeded the N.C. Health Advisory Level of 0.07 µg/L. While this study focuses on N.C., the wide-spread occurrence of Cr(VI) in groundwater at concentrations above health guidelines in aquifers of the Piedmont region could pose high human health risks to large populations in the eastern U.S. The paper was reported in Duke press

release and published in [NPR](#), [WFDD](#), [NSF Research news](#), [Triangle Business Journal](#), the [Progressive Pulse](#),

**October 16, 2019:** A new paper titled "Lead isotopes as a new tracer for detecting coal fly ash in the environment" was published in [Environmental Science and Technology Letters](#). This is the first study to systematically characterize the stable lead isotope ratios in fly ash derived from coals from the three major coal-producing basins



in the United States. The lead isotopic signature of fly ash is distinguishable from that of major anthropogenic lead sources in the United States, including leaded gasoline and paint, as well as the lead isotope ratios of naturally occurring sediments and soils. Lead isotopic analysis of sediments from Sutton Lake in North Carolina, where other indicators have identified the occurrence of [fly ash solids from unmonitored coal ash spills](#), shows a well-defined mixing between the Pb of unimpacted sediments and that of Appalachian Basin fly ash. This result further validates the applicability of lead isotopes as a new tracer for detecting the occurrence of coal fly ash in the environment. The study was reported in [Duke press release](#), and was published in multiple media outlets.

**October 2, 2014:** Avner Vengosh testified on the harmful effects of coal ash and the risks of softening the 2015 EPA coal ash rules at an EPA hearing in Arlington, Va. Here is the text of the testimony. [Vengosh comments on EPA Phase 2 Amendments final](#) This was covered by [Duke press release](#), the [News and Observer](#), [Sierra Magazine](#), [North Carolina Health News](#), [Coastal Review Online](#), [S&P](#)

Global, Waste 360, ABC News, Indiana Environmental Reporter, Utility Dive, Futurity, WFEA radio, Star Tribune,