Responses to Questions for the Record from Lisa Evans, Senior Counsel, Earthjustice pertaining to the hearing entitled "A Decade Later: A Review of Congressional Action, Environmental Protection Agency Rules, and Beneficial Use Opportunities for Coal Ash."

Submitted August 8, 2025

The Honorable Troy Carter (D-LA)

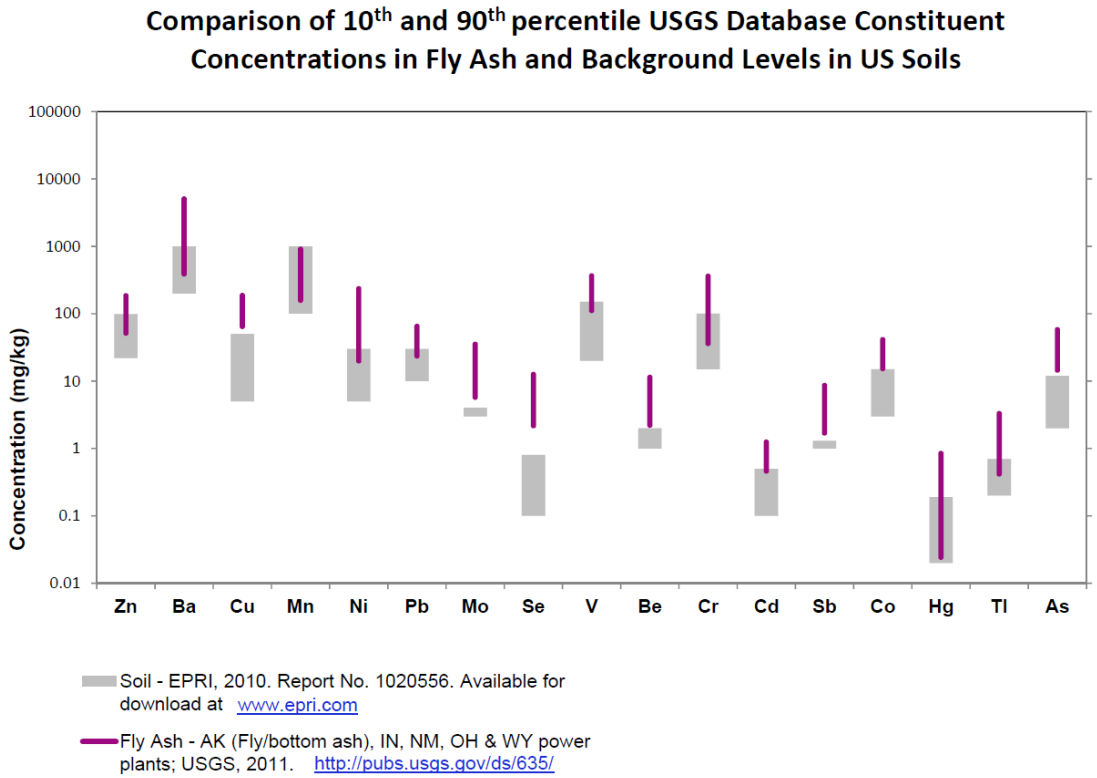
During the Subcommittee hearing, I asked Tom Adams, the Executive Director of the American Coal Ash Association, "Would you use coal ash to plant vegetables in your own backyard?" Mr. Adams said, "No."

a. Mr. Adams references a 2012 study based on U.S. Geological Survey data that concluded that metals found in coal ash are at levels similar to the levels in ordinary soils. Do you agree with this assessment and have there been more recent scientific assessments that have found either higher levels of metals or higher toxicity of the existing metals?

Mr. Adams is incorrect, and his statements are grossly misleading. The 2012 study based on USGS data in fact shows that metals found in coal ash are consistently **above** the levels in ordinary soils. The coal ash data evaluated in this report is from a small sample size of just five power plants with particularly low concentrations of Arsenic, Beryllium, Molybdenum, and Thallium.

The 2012 study presents the following graph.[1] Wherever the red line (coal ash metal levels) extends above the gray box (soil metals levels), this indicates that metal concentrations in coal ash exceed the levels found in soil.

[1] ACAA, *Coal Ash Material Safety: A Health Risk-Based Evaluation of USGS Coal Ash Data from Five US Power Plants* (June 2012) at Figure 18 PDF 130, https://acaa-usa.org/wp-content/uploads/free-publications/ACAA_CoalAshMaterialSafety_June2012.pdf.



The raw data[2] from this graph reveal that the mean concentration of each of these metals is **2 to 20 times higher in fly ash than in soil**. There is only one metal where this is not the case (Manganese). To claim that soil and coal ash have "similar levels" of metals when one is consistently 2 to 20 times higher than the other, is not only inaccurate, but woefully dangerous. Notably, the fly ash data evaluated in this report is taken from a mere five power plants.

In contrast, a 2010 Electric Power Research Institute (EPRI) report evaluated fly ash from more than 60 power plants. Not all metals were evaluated at every power plant, but most metals evaluated had a sample size of at least 30. Their analysis produced a very similar graph:[3]

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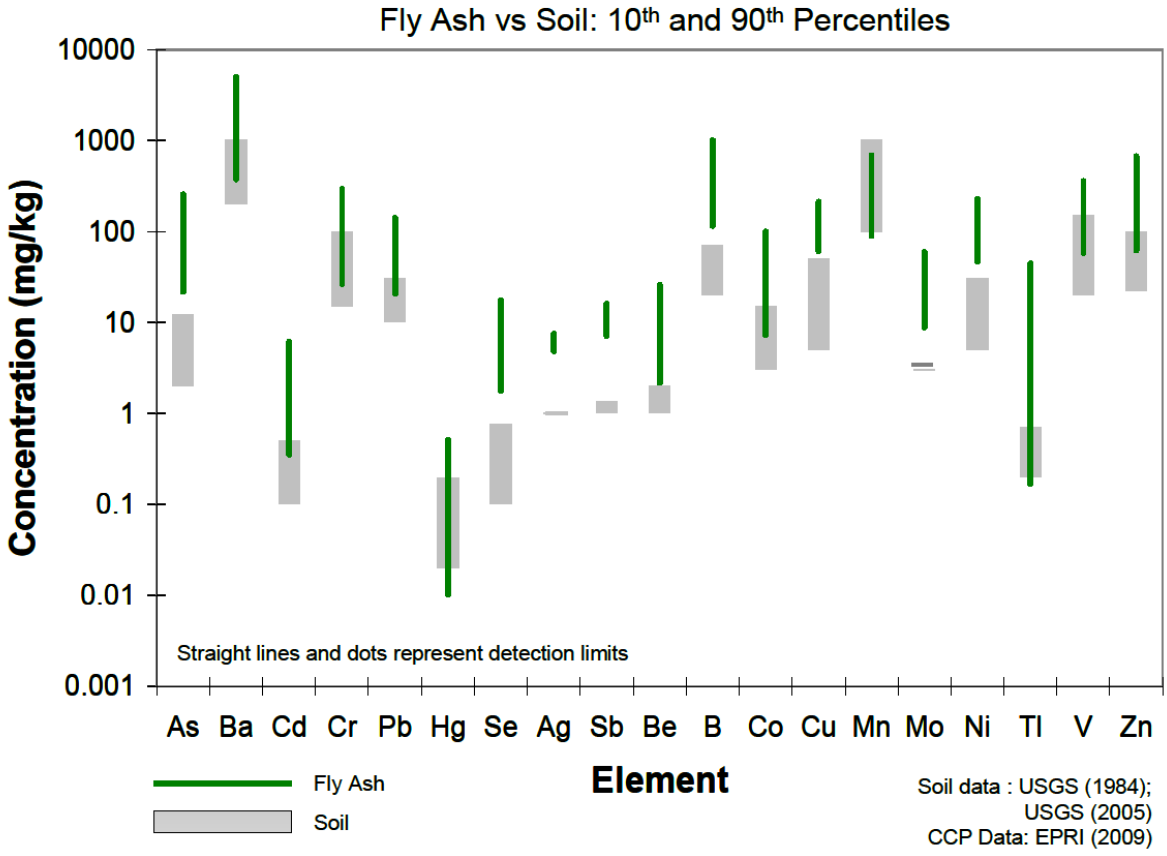
[2] ACAA, *Coal Ash Material Safety: A Health Risk-Based Evaluation of USGS Coal Ash Data from Five US Power Plants* (June 2012) at Table 11 PDF 76, https://acaa-usa.org/wp-content/uploads/free-publications/ACAA_CoalAshMaterialSafety_June2012.pdf.

[3] EPRI, *Comparison of Coal Combustion Products to Other Common Materials, Chemical Characteristics 1020556* (September 2010) at Figure 4-5 PDF 32, https://www.epri.com/research/products/000000000001020556.



Again, the raw data[4] show that mean heavy metal concentrations in fly ash are consistently at least twice as high as soil (with the exception of Manganese). The much larger sample size of the EPRI study shows that Arsenic, Beryllium, Molybdenum, and Thallium are found at higher levels when more than five power plants are evaluated, which may indicate some "cherry picking" of data by the ACAA. For example, while the 2012 study relied upon by ACAA showed an average Arsenic concentration in fly ash that was 3.6 times higher than the average in soil, the EPRI study presents an average Arsenic concentration in fly ash that is **12.2 times higher than the average in soil**.

Not only is Mr. Adams' characterization of this study inaccurate, and the study itself based on a miniscule sample size with lower-than-average Arsenic concentrations - new data have been released,

[4] EPRI, *Comparison of Coal Combustion Products to Other Common Materials, Chemical Characteristics 1020556* (September 2010) at Table 2-1 PDF 19, https://www.epri.com/research/products/000000000001020556.

illustrating that Arsenic is even more toxic than previously established. EPA's Integrated Risk Information System (IRIS) Toxicological Review of Inorganic Arsenic, finalized on January 13, 2025, raised the cancer potency of Arsenic by 21 times.[5] In addition, the toxicological review found increased risk of heart disease and diabetes from Arsenic ingestion and recommended that the safe, daily lifetime dose be 5 times lower than the current value.

Lastly, Mr. Adams' discussion notably omits a recent study that indicates significantly elevated levels of Radium in coal ash compared with soil. Although neither the EPRI report nor the USGS study evaluated the Radium content of coal ash and soil, there have been several recent studies that demonstrate how coal ash is enriched with Radium and radioactivity. For example, a study from 2015 finds that Radium activity in coal ash is about 3-5 times higher than Radium activity in average US soils.[6] The EPA assessed the risk when coal ash is mixed with clean surface soil in residential areas and found that even a small amount of coal ash can result in elevated cancer risk. If the coal ash has average concentrations of Radionuclides, a 1 in 10,000 cancer risk is estimated to occur at 21 percent mixing.[7]

b. If coal ash can "safely" be used as soil fill in neighborhoods across the nation as Mr. Adams says in his testimony, for the purpose of "beneficial reuse", why would the Executive Director of the American Coal Ash Association not want his family to consume vegetables that were grown using soil mixed with coal ash?

First, coal ash cannot "safely" be used as soil in residential areas. Placing fly ash in residential areas has led to them being designated as Superfund Sites where EPA has required the removal of fly ash from private yards, public playgrounds, and gardens. An example of this dangerous, "beneficial use" occurred in Town of Pines, Indiana, where coal ash was used as fill and led to significant contamination of the town's drinking water and soil. EPA found unsafe levels of Arsenic, Boron, and

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[5] https://iris.epa.gov/document/&deid=363892

[6] Lauer, N. E., Hower, J. C., Hsu-Kim, H., Taggart, R. K., & Vengosh, A., Naturally Occurring Radioactive Materials in Coals and Coal Combustion Residuals in the United States, *Environmental Science & Technology*, *49*(18) (2015) at 11227, https://doi.org/10.1021/acs.est.5b01978.

[7] US EPA, Risk Assessment of Coal Combustion Residuals: Legacy Impoundments and CCR Management Units (April 2024) at 6-18, https://www.regulations.gov/document/EPA-HQ-OLEM-2020-0107-1075.

Molybdenum in well water and dangerous levels of Arsenic and Thallium in playgrounds and residential soil. The EPA declared Town of Pines a Superfund site in 2001. Cleanup is still ongoing 24 years later.[8]

Secondly, Mr. Adams is correct that his family **should not** consume vegetables grown in soil mixed with coal ash. The heavy metals in coal ash can be taken up by vegetables grown in contaminated soil. As an example, one study concluded that Arsenic and Thallium can exceed potentially toxic levels in basil and zucchini when grown in mixtures of fly ash and soil.[9] Other adverse impacts on vegetables include elevated Barium and Cadmium concentrations in tomatoes, as well as elevated Nickel concentrations in basil grown in fly ash-contaminated soil.[10] Furthermore, gardeners, children, and vulnerable individuals can be exposed to hazardous chemicals like Arsenic and Thallium (rat poison) by ingesting soil particles that contain coal ash, handling contaminated soil, or breathing in contaminated soil particles.

In sum, garden soil mixed with coal ash is far from safe. Taking into consideration the threat of exposure to hazardous heavy metals through ingestion, inhalation and direct contact, Duke University Superfund Research Center created a "Garden and Soil Contaminant Fact Sheet Collection" that quantifies threats from numerous coal ash pollutants.[11] For Arsenic, the researchers found that soil containing more than 16 parts per million (ppm) of Arsenic should not be used for gardens.[12] As explained above, the 2010 EPRI Report found a mean concentration of Arsenic in fly ash of 70 ppm, which is more than 4 times the risk level for garden soil. Consequently, one can easily conclude that

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[8] *See* USEPA, Superfund Site:Town of Pines Groundwater Plume. Town of Pines, IN, available at https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0508071

[9] Brake, S.S., Jensen, R.R. & Mattox, J.M. Effects of coal fly ash amended soils on trace element uptake in plants. *Env Geol* **45**, 680–689 (2004). https://doi.org/10.1007/s00254-003-0921-z

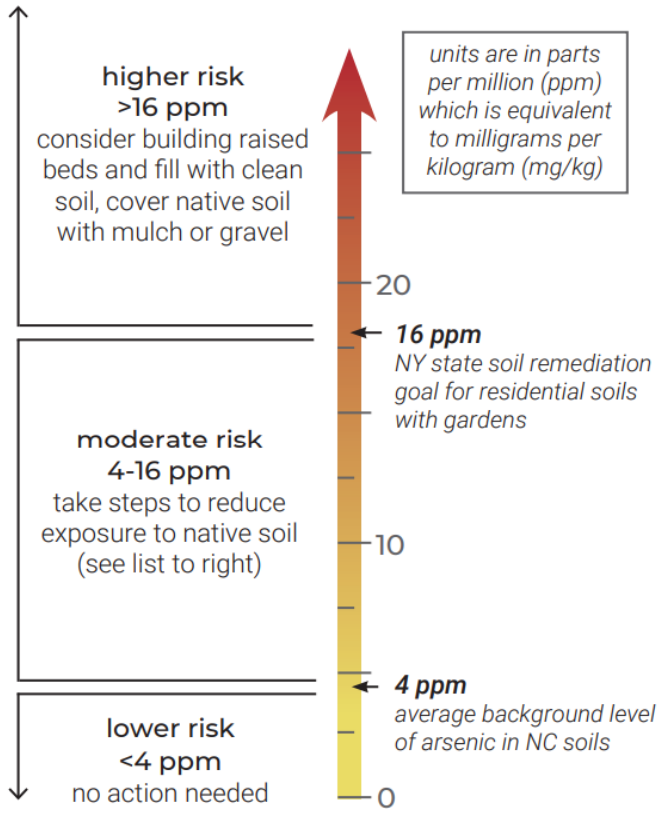
[10] *Id.*

[11] Duke University Superfund Research Center, Garden and Soil Contaminant Factsheet Collection, (Jan. 2020), available at https://sites.nicholas.duke.edu/superfundcec/files/2020/09/Garden-factsheet-collection.pdf

[12] *Id.*

fly ash should never be used in a garden. And vegetables grown in fly ash and soil should never be eaten.

The graphic on the Duke University fact sheet is replicated below:



c. What does Mr. Adam's response demonstrate about the coal industry's awareness of the threats posed by coal ash?

Mr. Adams stated that he would not live next to a coal ash dump and would not eat food grown in soil mixed with coal ash. These statements reveal that he is, in fact, acutely aware of the threats to human health posed by the hazardous pollutants in coal ash. However, Mr. Adams' public pronouncements and those of the ACAA contradict the opinions he expressed to the Committee.

Fact sheets posted on the ACAA website routinely minimize the hazardous pollutants in coal ash.[13] In one fact sheet, which has been posted on the ACAA website since 2010, the lobbying group falsely states, "the constituents in coal fly ash fall within the typical ranges of those in soils found across the U.S." Strikingly, the fact sheet maintains that the median arsenic content of fly ash is 4.6 parts per million. As indicated by the USGS Study data (on which Mr. Adams' testimony relies) and the 2010 EPRI Report described above, the median arsenic content of fly ash is **10 to 15 times this amount**. Yet, the ACAA repeatedly asserts that the hazardous pollutants in coal ash are no more dangerous than those in ordinary soil. This myth is not limited to the ACAA. The Tennessee Valley Authority and the Utility Solid Waste Activities Group (USWAG)[14] make the same claims, most notably for arsenic and radium.

This gaslighting of the public – claiming that coal ash is harmless when scientific data clearly indicate it is not – has harmed public health and resulted in the loss of life. The widespread use of coal ash as a substitute for soil has caused illness in several communities where exposure to contaminated soil and drinking water was rampant. One of the most tragic examples is the death of more than 60 workers who cleaned up the Tennessee Valley Authority Kingston coal ash spill, where more than 1 billion gallons of toxic coal ash sludge burst from the plant's enormous coal ash pond, sweeping away homes and flooding two rivers. Jacobs Engineering, the contractor in charge of cleanup, falsely claimed that the ash was benign and prohibited its workers from wearing respirators to protect themselves. Hundreds still remain sick from the exposure to the hazardous chemicals in the ash. Since 1999, EPA has considered coal ash to be a hazardous substance under the Superfund law due to the hazardous metals it contains, including arsenic, lead, mercury, radium, thallium and more.

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[13] *See* ACAA Fact Sheet, "Coal Combustion Products: Not a Hazardous Waste", March 10, 2009, available at https://acaa-usa.org/wp-content/uploads/free-publications/CCP_Fact_Sheet_2_Safe_and_Not_Hazardous.pdf

[14] The Utilities Solid Waste Utility Group is an industry trade lobbying organization formed in 1978. USWAG members include more 130 utility operating companies, energy companies, and industry associations, including the National Rural Electric Cooperative Association (NRECA), the American Public Power Association (APPA), and the American Gas Association (AGA). *See* www.uswag.org

It is not only dishonest, but dangerous and reckless, for the coal industry to claim that this toxic waste is benign. The utility and reuse industries have known for decades that this is patently false. Their own data indicate it is both toxic and radioactive. The fact that Mr. Adams, Executive Director of the ACAA since 2009, openly admits that he would not himself eat, nor have his own family eat, food grown in this waste is indicative of the hypocrisy and reckless disregard for human health shared by the coal industry.