Good morning. Thank you so much for inviting me to speak today. My name is Dr. Yolanda Whyte. I practice pediatrics throughout the state of Georgia, within the jurisdiction of EPA Region 4, which has suffered from more coal ash disasters and dumping than any other region. I see a large number of children with neurodevelopmental disorders, asthma, cancers and other chronic conditions that are now being diagnosed more often and at younger ages, but unfortunately we still can’t prevent them. However, we can look into the root cause and reduce or eliminate toxic exposures. I first became aware of coal ash four years ago and since then, I’ve expressed my concerns to members of Congress, EPA and White House officials, colleagues and through social media.

Toxicity
The toxicity of coal ash is based on its high concentration and multiplicity of heavy metals, radionuclides and volatile organic compounds which together, have a synergistic effect that biomagnifies the toxicity\(^1\). Many of these toxins are so pervasive, they can penetrate organs, tissues, cells and cross the placenta, blood-brain barrier and even breastmilk. There is one type of ultrafine particulate matter specific to coal ash, known as coal fly ash nanoparticle. Compared to the diameter of hair being 100,000 nm, its extremely small size of 7-30 nm allows it to penetrate very deeply in a direct, fast, laminar flow into the lungs and heart and circulation into cells and penetrate the nucleus where it can damage genetic material\(^2\).

Health Impacts
It’s a challenge finding health studies on coal ash, but according to news articles\(^3\) and reports from the state\(^4\) and nonprofits like SACE\(^5\), residents of Juliette, GA, near one of the nation’s largest coal ash impoundments complained of nosebleeds, throat irritation, respiratory illnesses, gastrointestinal symptoms, muscle aches and twitching, neuropathy, dementia, dizziness, headaches, stress, insomnia,
rashes and other vague and nondescript symptoms. So you can see how challenging medical management would be, where you could only treat the symptoms and not the disease. But unfortunately, these symptoms progress to bone and kidney diseases, autoimmune disorders and cancers of just about any organ. In fact, any illness is possible including mysterious illnesses and clinical conundrums. Pets have also been reported to be sick. So many have died off or relocated that this once vibrant community is now a ghost town. Their class action lawsuits were dismissed. If this middle class white community could not get justice, what hope do the poor and communities of color have? All this week, residents of Ware and Wayne counties in Georgia have been protesting the dumping of the Dan River coal ash into their low income community where they're already battling pediatric cancer clusters for years.

**Pediatric Health Impacts**

As for children, according to a health study of a low income Kentucky community, located near a “high hazard” coal ash pond, 85% of parents reported having a child with asthma, ADHD, emotional problems and other illnesses. They were also concerned that their children were frequently coated with a dark film they believed to be coal ash, and so were their outdoor playing surfaces, toys and even local animals.

Children are the most disproportionately impacted group because their faster breathing rate, heart rate and metabolism cause them to soak up these toxins like a sponge. Children also have a greater intestinal absorption of heavy metals. For example, 50% of ingested lead is absorbed by children vs. only 10% in adults, and 70% is stored in their bones. During pregnancy, lead and other heavy metals are resorbed from bone to reenter the bloodstream. The liver and kidneys of children are underdeveloped so they are less able to excrete heavy metals in their feces and urine. Their immune system is underdeveloped, particularly the glutathione anti-oxidant system which removes heavy metals. The blood brain-barrier of younger children is more permeable, allowing toxins to more freely enter and damage the brain and nervous system.

**Pregnant women and their fetus**

With pregnant women, the unborn child is most vulnerable during the 1st trimester when many women may not be aware that they are pregnant. Once a baby is born and the cord is cut, samplings of that umbilical cord blood compared to maternal blood in one study showed that of all the heavy metals
tested, levels of mercury in particular, were higher in umbilical cord blood\textsuperscript{7}. Another study of 538 umbilical cord blood samples, detected that mercury levels were 9.6 times higher for African-American women than the other ethnicities\textsuperscript{8}. Another study testing umbilical cord blood from African-, Latino-, and Asian-American women, found that ALL 10 samples contained detectable levels of lead and mercury\textsuperscript{2} and there is no safe level of lead or mercury\textsuperscript{9}.

**Communities of color**
The CDC’s most recent 2014 biomonitoring study\textsuperscript{10} confirmed that communities of color have the greatest heavy metal exposures. For example, Asian-Americans had the highest blood levels of lead, mercury, cadmium and manganese and urine levels of mercury, cadmium, arsenic and thallium. African-Americans had the highest urine levels of lead, manganese and molybdenum. Mexican-Americans had the highest urine levels of uranium.

**Other vulnerable groups**
Seniors, those with pre-existing illnesses and coal ash workers are other high risk groups deserving of protection.

**Environmental justice communities**
In addition to the high health and toxin burden of environmental justice communities like Uniontown, AL, Kingston, TN, Dan River, NC, Juliette, GA and Cheshire, OH, they also have to bear overwhelming and ongoing psychosocial stressors, apathy, fear of job loss or retaliation, financial losses, decreased property and land value. Not only has the EPA failed to protect them under Title VI and the presidential executive order 12898, but they did not adhere to the expert guidance offered by the National Research Council in their 2009 report entitled Science & Decisions: Advancing Risk Assessment, where the EPA was advised to take into account all the cumulative risks in their decision-making process.

**Inadequate Health Protections**
The medical community is, for the most part, unaware of coal ash. There are rare focused studies of exposed populations or practice guidelines, protocols, recommendations or standards of care on how to treat and manage them.

**Prevention**
So in conclusion, this constitutes chemical, biological and environmental warfare, it’s time we step up to European standards and institute the precautionary principle. If a threat of serious or irreversible damage to health or environment exists, a lack of full scientific knowledge about the situation should not be allowed to delay actions taken to avoid or diminish that harm. Thank you again for having this briefing.

References


3. CNN. A power plant, cancer and a small town’s fears. April 1, 2012


