

Topic: Coal and Respiratory Disease (Asthma) in Kentucky and Elsewhere

SOURCE: *Kentucky Healthy People 2000*. “24. Respiratory Diseases.”

ADDRESS: <http://chfs.ky.gov/NR/rdonlyres/F64BDA29-5054-4131-8214-F52FE0DCA9EA/0/HKY2010Ch24.pdf>

ASTHMA: “[A]ffects an estimated 14.9 million Americans and its **prevalence is highest in the South, with over 220,000 Kentuckians affected. Nearly 72 percent occur in persons under age 45** and the prevalence is increasing in nearly all population groups, **especially children**. There were 5,338 deaths nationwide in **1997** due to asthma and **86 deaths in Kentucky during the same year**. There are approximately 9 million physician office visits related to asthma annually nationwide, and there were **6,482 hospital discharges with that diagnosis in Kentucky during 1996**. This indicates that there is a heavy illness burden from this disease, but death from asthma is uncommon. The **cause of asthma** is five fold: allergy, infection, **air pollution**, exercise, and psychogenic factors. Upper respiratory infections and allergies appear to be responsible for the majority of asthma exacerbations in both children and adults. **Socioeconomic status, especially poverty**, is also an **important contributing factor**. Although the **frequency of asthma is highest in whites**, the rate is **higher among African Americans. Environmental pollutants, ozone, sulfur dioxide, nitrogen dioxides**, acid aerosols, **particulates**, and tobacco smoke are **major contributors** to asthmatic attacks. Viruses, particularly rhinoviruses, play a major role in asthma in children.” [p. 339]

“...5000 deaths occur nationwide, with **220,000 cases in** and 86 deaths **in Kentucky**.” [p. 341]

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Topic: Coal Ash and Louisville in 2011: A Sad Case Study

SOURCE: Peterson, Erica. 2011. “Coal Ash Scares, Sickens Southwest Louisville Neighborhood.” *Environment*. August 1.

ADDRESS: <http://wfpl.org/coal-ash-scares-sickens-southwest-louisville-neighborhood/>

You can’t see the smokestacks of the Cane Run Power Station from Stephanie Hogan’s home, even though she lives a block away. And while the power plant isn’t visible, it’s still a looming presence in Hogan’s life.

“Oh, he breathes so bad, he sounds like Darth Vader.” Hogan shakes her head, and her two-year-old son Cody wheezes. “You ain’t even been running.”

The family bought their trailer near the Louisville Gas and Electric-operated power plant about 15 months ago, and since then, Cody has developed serious respiratory problems. Eventually, his mom took him to a specialist, who pinpointed the potential cause of Cody's sickness.

"I think it was the second visit, she asked where we lived," Hogan said. "And I told her, and she said 'oh, you live next to that power plant. You need to move.'"

But Hogan can't move. She's trapped by her trailer's low resale value, as well as her son's rising medical expenses. Cody has asthma. He's had tubes installed in his ears twice and three times he's come down with an unexplained fever. Hogan estimates she spent nearly \$4,000 in doctor's visits and medication last year.

She says the culprit is coal ash: the sometimes-fine, sometimes-chunky material that's leftover after coal is burned. It coats her porch, and she doesn't let Cody play outside anymore, no matter how much he begs.

An Inevitable Byproduct

Coal generates more than half of the nation's energy and it's burned in power plants in all but four states. One inevitable byproduct of burning coal is ash, and there's a lot of coal ash in America.

So much, in fact, that "you could fill the boxcars of a freight train that would stretch from New York City to Melbourne, Australia every year with the coal ash that American power plants generate," Jeff Stant said. He's the director of the Environmental Integrity Project's Coal Combustion Waste Initiative.

"A lot of this ash has got the consistency of talc. People breathe it in, their lungs never get rid of it. It has metals that cross the lung's tissue into the blood stream. There have been studies done of the exposure of rats to this dust and other lab animals, and the results have been very disturbing."

At the Cane Run plant, the ash is stored in a landfill and a pond. The pond is invisible from the road, but the landfill is pretty obvious: huge piles of slate-grey coal ash rising off the banks of the Ohio River. At the base of the landfill is a pauper's cemetery.

"It's kinda fitting, you know," Kathy Little said, walking through the cemetery. "It really is because that's where they want to be, within the poorest of the poor areas."

Little lives in one of the houses facing the power plant. The Cane Run Power Station is one of three area LG&E coal-fired plants. It burns 1.3 million tons of coal every year. Last year, it produced 160,000 tons of coal ash.

Before the ash is placed in a landfill, it's mixed with different materials that create a cement-like consistency. It's loaded into piles, which is where LG&E's Mike Winkler says it stays.

“It’s plenty heavy enough to stay in place,” he said. “And during the placement process if it’s too dry, then it’s wetted. We’ll have trucks that come through and spray it to give it wetness. But it’s got enough moisture in it that it doesn’t blow off in general.”

But as we walk down the street, Little points to the air above the landfill.

“Yeah. There it goes,” she said. “You see the black up there? If you notice, you’ll see some ash blowing. That’s what they’re trying to keep on their property, and it’s not happening.”

Sure enough, ash wisps are flying off. They end up on nearby porches and siding. For the neighbors, this is annoying, and also worrisome. Samples taken by the Louisville Metro Air Pollution Control District and, most recently, LG&E itself have confirmed the presence of fly ash on several area homes.

Damage Control

“Okay, here’s our ash pond!” Steve Turner exclaims. He’s the general manager at LG&E’s Cane Run Power Station, and he is giving Kathy Little and her husband Tony a tour of the plant.

“You can see bottom ash, but it’s down at the water level, so it stays wetted.” After the company released the results of their sampling, they convened the three families whose homes were sampled for a meeting. LG&E is doing damage control.

But there are conflicting data. The first samples taken directly off their homes show alarmingly high amounts of fly ash. But the second set, gathered from the air, shows much lower levels.

Turner stands in a conference room in front of a PowerPoint presentation about the company’s operation.

“So to get started, this is the Cane Run site,” he said. “We are a generating facility. We generate electricity. And we do that safely, reliably and while complying with all of our environmental permits.”

The people in the room want to talk about the ash. As Turner speaks, Debbie Walker shakes her head. She looks disgusted.

“Why don’t you live by it?” she asked Turner.

“Well, the health issues...” he trails off.

“We can’t leave because nobody’s going to buy our places because of this dump,” Walker said. “If you don’t think it’s a health issue I ask anybody in this room to go live by it.”

“Well, again...”

“Well, yeah, that’s what I thought.”

But the company isn’t sure what to do about it. Cane Run is a coal-fired power plant, and it’s impossible to burn coal without creating coal ash.

A Growing Problem

The plant’s pond and landfill hold hundred of thousands of tons of coal ash and that amount is growing. It’s growing because Americans’ consumption of coal is rising— from 1989 to 2009, the amount of coal burned in the U.S. increased by more than 100 million tons.

New pollution control devices on power plants are exacerbating the problem. Jeff Stant of the Environmental Integrity Project says while these devices reduce air pollution, they increase the amount of waste.

“The more you try to control the emissions of a power plant, the more toxic the ash becomes and the more ash you generate,” Stant said.

LG&E says it’s considering a few different options to control the ash the plant’s neighbors see flying off the landfill. They might put an adhesive on the landfill and they’re trying to reduce the amount of dust that’s kicked up by trucks on roads near the landfill. The company says more testing is needed to determine whether fly ash is leaving the site, but if Metro Government decides the dust is posing a nuisance to the plant’s neighbors, LG&E may be forced to take action.

The company is planning to stop putting ash in the current landfill soon...and start putting it in another, yet-to-be-built landfill.

The new landfill is designed to hold 16 to 20 years of coal ash, but the company estimates the plant won’t be burning coal for that long. If upcoming federal regulations make it too expensive to burn coal, the plant may switch to natural gas, or even shut down. Regardless, LG&E’s Mike Winkler says the coal ash will remain.

“It will stay,” he said. “Ultimately if this facility is closed from the standpoint of burning coal, then there are closure plans for landfills and ash ponds that you have to develop with the state, where essentially they’re capped with clay and then there’s monitoring that goes on associated with that.”

That doesn’t make Kathy Little feel better about living across from the landfill and pond. Especially since there’s nothing between the ash and the ground. She worries the groundwater is contaminated.

“They’ve put all this here,” Little said. “Now are we going to have to live with this, with this toxic dump, is basically what it is. Even if they cover it up, it’s a toxic dump.”

But LG&E says it’s not a toxic dump, and neither does the federal government...yet.

Coal Ash and the EPA

Kathy Little and Debbie Walker stand in Walker’s front yard, 50 feet from the ash landfill at the Cane Run plant. They watch as heavy machinery backs up, pushing ash from one pile to another.

Walker says she used to be able to see Indiana from her window. Now, she just sees the mountains of coal ash.

“That wasn’t here when we first moved here. If that was here when I first moved here, I wouldn’t have moved here,” she laughed. “There’s no way.”

Little says she feels abandoned by federal and state regulators.

“I have nothing against coal,” she said. “Don’t get me wrong—I don’t. The coal didn’t cause this situation. This private company caused this situation and Kentucky allowed them to do it. That’s who I blame.”

The women feel like there are no regulations in place. There are, but they’re not always easy to notice.

When a power company wants to build a landfill or storage pond, it has to get a permit from the Kentucky Department of Waste Management. For landfills, it also needs a permit from the Army Corps of Engineers. There’s a water quality certificate from the state for discharge, and a permit from Metro Government for air emissions.

The federal Environmental Protection Agency doesn’t regulate coal ash. Last year it proposed two rules—one to regulate ash as a hazardous material and another to designate it a “special waste.” Environmental groups have been lobbying for the former, while the coal industry wants the latter.

Coal Ash and Recycling

LG&E’s John Voyles says if the EPA characterizes coal ash as a hazardous waste, it will halt coal ash recycling. Right now, there’s a small industry centered around repurposing coal ash in materials like cement. Voyles says all that ash could end up in a landfill if it’s suddenly declared toxic.

“If it’s declared hazardous waste, all of the beneficial reuses will disappear because you won’t have people wanting to say, I want to put a hazardous waste product in a

gypsum wallboard or in cement,” he said. “Where does it go? If it’s declared hazardous, it’s hazardous.”

Ash recycling is something that the utility company likes to talk about. If the ash is reused, it doesn’t take up space in landfills or ponds. Plus, the utility company can profit off the waste.

Jeff Stant of the Environmental Integrity Project agrees with the utilities that recycling the ash is essential. But he says some of the so-called “beneficial reuses” for coal ash—like building roads or filling in wetlands—are even worse for the environment[.]

“It has to be ash that’s put in concrete or cement or shingles in a way that it’s encapsulated and the metal leaching potential is made very low,” he said.

But in reality, coal ash recycling is still a small industry. According to the American Coal Ash Association, nationwide about 41 percent of the coal ash produced in 2009 was recycled in some way. At Cane Run, that figure was much smaller for the same year—only about four percent of their ash was recycled. The rest goes to the landfill or pond.

In her trailer a block away from the plant, Stephanie Hogan watches her two-year-old son Cody play. Out of fear that his breathing problems were caused by the coal ash that coats her porch, Hogan won’t let him outside.

At this point, Hogan wants LG&E to fix the situation, no matter the cost.

“They’re going to have to upgrade what they have now and they want to pass it on to us. They want to pass it on to the consumers,” she said. She sees irony in the situation. “So, it’s like, you’re poisoning my child and you want me to pay for you not to poison him.”

But while a lot of the neighborhood’s anger is focused at the power company, many are bewildered why this is allowed to happen. Kathy Little has asked for help from Metro Government and the state, but still hasn’t seen results.

“You know, we work hard, we don’t sit over here on government assistance or anything like that, that’s for sure,” she said. “We all work very, very hard and pay taxes. We basically pay taxes to these government agencies that are supposed to protect our children. And we are paying a very high price for cheap electricity, for cheap power.”

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Topic: Health and Coal Extraction in Eastern Kentucky and West Virginia

SOURCE: Pugh, James Kent 2014 (May). *Down comes the Mountain: coal mining and health in central Appalachia from 2000 to 2010*. M.A. Thesis. Department of Sociology. University of Louisville. Available through University of Louisville. ThinkIR: the University of Louisville's institutional Repository. Electronic Theses and Dissertations. 5-2014.

ADDRESS: <http://ir.library.louisville.edu/cgi/viewcontent.cgi?article=2161&context=etd> AND/OR: <https://doi.org/10.18297/etd/1162>

[NOTE: This work reviews health conditions in the coal mining regions of West Virginia and eastern Kentucky (but not respiratory illness per se). Nonetheless, a significant number of the health problems and premature deaths can be attributed to coal dust, ash, and the toxic content of mining procedures for miners themselves and residents of the communities in which they live.]

The author [me] focuses upon rates of health disease and cancer attributed to the use of coal. An extensive review of the literature as of 2014 is provided.

Some Significant Quotations from the Pugh Document:

“Health-wise **Appalachia has higher than national rates of mortality** from all cancers, heart disease, and **respiratory diseases...**” (p. 10)

“In addition to poorer health in coal mining counties, **these counties** tend to have **higher rates of mortality compared to the non-coal producing counties in Appalachia and in the U.S. overall...**” (p. 11)

“Another mechanism through which health is adversely affected is through the **release of pollution into the air, reducing air quality, and negatively altering respiratory functions.... Metals can be released as pollutants** or released into...**ground water. Exposure to toxic chemicals such as lead, mercury, and selenium are also significantly hazardous when released into the air.** These chemicals have the potential to be transported into ground water from air emissions, landfills, or water emissions. In **communities** that have **no running water and use uninspected wells, exposure could be great...**” (pp. 16-17).

[NOTE: The James Kent Pugh thesis contains numerous sub-chapters/sections that provide an excellent overview of what confronts the citizens of these coal mining areas in Appalachia. **AND REMEMBER – the health problems they face are not unique to them. An example is the newspaper story about coal ash in Louisville. So we are by no means immune from the damage.**]

TOPIC: Health Consequences of Power Plant Emissions

SOURCE: Walker, Elizabeth and Deborah Payne. 2012(?). “Health Impact Assessment of coal and clean Energy Options in Kentucky.” *A Report from [the] Kentucky Environmental Foundation*. P.O. Box 467, Berea, Kentucky 40403.

ADDRESS: http://www.kyenvironmentalfoundation.org/uploads/1/8/5/9/18595042/kef_health_impact_assessment_energy_report_web.pdf

[**NOTE:** This document has sections discussing (1.) *Particulates* [pp. 18-19], 2.) *Mercury emissions* [p. 20], and (3.) *Greenhouse gas emissions* [p. 22]. This report *focuses* upon the first group, this being **Particulates**. However, the data for other problems associated with the burning of coal and coal fired plants are just as sobering. You, the reader can investigate this material yourself, and from it generate even more striking Talking Points to use in your conversations with our Kentucky MoCs or members of their staffs.

The authors (Walker and Payne) also discuss, in impressive and informative detail, many other problems in addition to the 3 aforementioned items. All of this material reveals the inevitable detrimental consequences resulting from the extraction and burning of coal as an energy source. To repeat, the extensive notes found below (and taken from this document, pertain *ONLY* to *Particulates*.)

However, in one section of the document, this being the “Health Impacts of Surface Mining,”(pp. 6-9), there is a list of the heavy metals “potentially found in drinking water contaminated by coal mining practices and potential health effects from long term exposure above the maximum contamination level (MCL) (unless specified as short term)” (p. 6). The table cites data from a 2011 EPA document.

This contributor (me) suggests that **items** in the list be **used** when **discussing the financial benefits of “bringing back coal,”** a program so enthusiastically proclaimed by members of the current administration. This dubious emphasis carries with it a **cost far higher than any imagined restoration of jobs resulting from de-regulation**. That unrecognized, or ignored, cost is health care, and emotional and physiological misery among the population in which jobs would ostensibly be “created.”

In other words, politicians who propose the resurgence of coal mining and the use of coal as a major source of energy are also advocates for misery, and possible premature death. This is a strong indictment to be sure, but it does have a solid foundation. The list is:

<u>Heavy Metal</u>	<u>Physiological and Psychological Effects of Exposure/Consumption/Ingestion</u>
Antimony	Potentially causes high blood pressure.
Arsenic	Potentially causes damage to the skin and circulatory system

	and an increased risk of cancer.
Barium	Potentially causes increase in blood pressure.
Beryllium	Potentially causes intestinal lesions.
Cadmium	Kidney damage.
Copper	<i>Short Term Exposure:</i> Gastrointestinal distress <i>Long Term Exposure:</i> Liver of kidney damage
Chromium	Allergic dermatitis.
Selenium	Hair or fingernail loss; numbness in fingers or toes; circulatory problems.
Lead	<i>Infants and children:</i> Delays in physical or mental development; children could show slight deficits in attention span and learning disabilities. <i>Adults:</i> Kidney problems; high blood pressure
Mercury (inorganic)	Kidney damage.

Health Impacts of coal Power Plant Emission (pp. 18-19)

1.) **Particulates (PM) (p. 18):**

- “Gases and particulates released by burning coal can distribute up to hundreds of miles from the source.”
- Clean Air Task Force Study: “Kentucky experiences approximately 412 deaths, 286 hospitalization and 539 heart attacks annually due to power plant pollution.”
- The Real Danger: “...particulate matter smaller than 2.5 micrometers (PM2.5), nitrogen oxides (NO_x), sulfur dioxide (SO₂) and Ozone (O₃).”
- Consequences of exposure to these particulates: damage to respiratory and circulatory systems. “Ozone can irritate the respiratory system, inducing asthma attacks, and causing wheezing and shortness of breath.”
- Exposure to sulfur dioxide (SO₂) is no fun either. Effects include “nasal inflammation, shortness of breath, wheezing, coughing, destabilized heart rhythms, asthma, low birth weights and increased risk of infant death.” And then there is the reaction of sulfur dioxide with sunlight, this being acid rain.

2.) **Cardiovascular Disease (p. 18):**

- Particulate matter in form of dust or pollen usually greater than 10 microns- can be expelled through lungs by coughing. However, “particulates created by combustion (e.g., burning coal) most smaller, 2.5 microns or less, and as stated above, can travel hundreds of miles before being inhaled into the lungs.”
- Entering the human circulatory system results in damage “through inflammation and oxidation.” This in turn constricts blood vessels, thus raising blood pressure. And if prolonged, this blood pressure elevation due to inhalation of particulate matter can produce “heart attacks, arrhythmia, stroke and even death.” Another consequence of long-term exposure is atherosclerosis, which is the build-up of plaque in human arteries.

- Frightening examples of heart disease and arrhythmias as a result of only short-term exposure to particulate matter. Occurred after only a few hours to within a few days. a.) Donora, PA (October 27-30, 1948), and “London Fog” (December 5-9, 1952). Mortality rates were 6 and 9 times higher than normal (due to coal burning stoves in homes, plus the presence of zinc, iron, steel and electrical industries in the region, and the pollutants that these industries “ejected” into the atmosphere.
- In the aftermath of these events, other studies concluded that “for each 10mg/m³ increase in long-term average of PM_{2.5}[,] there is an associated 6% risk of cardiopulmonary mortality.” **In other words, you have to breath to live, but what you breath might kill you.**
- BUT, decreased exposure** to particulate matter created by burning coal reduced mortality and morbidity. **Deregulation of coal-related industrial activities, as proposed by our MoCs, would inevitably increase both maladies.**

3.) Asthma (pp. 18-19):

- Big problem in Kentucky:** Approximately 1 in 10 adults suffer from the condition.
- Pay attention to this statistic because 3,331,201 people “live within 30 miles of a power plant” circa 2012. **That most likely means you!**
- SO**, 811,993 children belong in this group of people, and 44,158 of these young individuals are asthmatic. Furthermore, “children of color” in this Kentucky group have the “highest rates of asthma...[which are/were] as high as 22% [of those who were attending] high school.” (p. 18)
- Treating Asthma is **VERY** expensive! (p. 19)
 - In 2002, Kentucky hospitals saw at least “7,150 asthma patients.” Average expense per patient was \$6,053.**
 - In 2007, treating 6,235 asthmatic Kentuckians were hospitalized, and this cost \$62,231,688!!**
 - In 2006, 883,525 people were enrolled in Kentucky’s Medicaid program. Of this group, 81,431 individuals (9.2%) had to receive treatment for “asthma related services....”
 - Other statistical sources indicate an “average of 50 deaths (1.2 per 100,000) occur annually in Kentucky with asthma listed as the primary cause.”

3.) Prenatal Development (p. 19):

- Air pollution, including PM_{2.5} affects the health and development of infants.
 - Potential Consequences: increased risk of preterm birth, with fetus experiencing “improper immune development and reduced birth weight.”
 - Utah study: Closure of coal-burning steel plant resulted in decrease of preterm births. Preterm births increased after steel plant was reopened.
 - Tongliang Province, China: testing cord blood for “polycyclic aromatic hydrocarbons, lead, and mercury adversely affected the

development of children in motor, adaptive, language and social areas.”

-One “meta-analysis” (i.e., using research from multiple studies):

-“[E]ach 10 ug/m³ increase in PM₁₀ was associated with a 22% increase in respiratory post-neonatal mortality.”

-Significance for Kentucky: Ominous because of Kentucky’s “high rates of air pollution from power plants...” **And remember**, many of us live less than 30 miles from a major source of such misery, so the long-term health of the infant you might want to create, or the one you currently have, is most definitely not a certainty.

ENOUGH SAID: Investigate the sources (digital or otherwise) cited at the beginning for additional revealing, disturbing information created by the reliance upon coal as a primary source of energy. Again, frame your conversation with proponents of deregulation using data from the medical and natural sciences. This stuff does not need “additional study.” It is empirical, non-subjective.

Rand Paul, Mitch McConnell and Andy Barr, as well as other elected officials in the Commonwealth, must be made aware of the truly detrimental health consequences for the constituents they are supposed to represent. This concern is conspicuous by its absence in their arguments! Good Luck!!!

Respectfully submitted,

Paul Winther [E.P.A. Research Committee for *Indivisible Bluegrass*.]

**Additional Web-Sites for Pruitt, E.P.A. Deregulation, Coal, and Illness
(Web-site addresses are included)**

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 [NOTE: Menon describes horrific health consequences of unregulated coal usage in this part of India. Article has particular significance for this writer due to having lived in India. Although Menon’s observations are correct for this major city, the problem is now everywhere, including lower elevations of the Himalaya mountain range. Higher elevations are increasingly being affected as well. Breathing in India is becoming dangerous to one’s health.]
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