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*...helping communities protect  
themselves from polluting energy  
and waste technologies*

# Why are waste coal piles a problem?

- Look bad
- Leach iron, manganese and aluminum pollution into waterways
- Cause acid drainage when exposed to water
- Sometimes catch fire



# How is waste coal supposed to be managed?

The 1977 Surface Mining Control and Reclamation Act (SMCRA) recognizes waste coal as potential “toxic forming material” due to the high sulfur levels that contribute to acid drainage.

The SMCRA law states that burying waste coal is the best way to reduce acidity from these piles.



# The Power Industry's Answer to Waste Coal Piles: Fluidized Bed Combustors

- FBC boiler technology over 30 years old
- Can be used to burn a wide range of fuels, including very poor fuels like waste coal
- Started to be used to burn waste coal in late 1980s

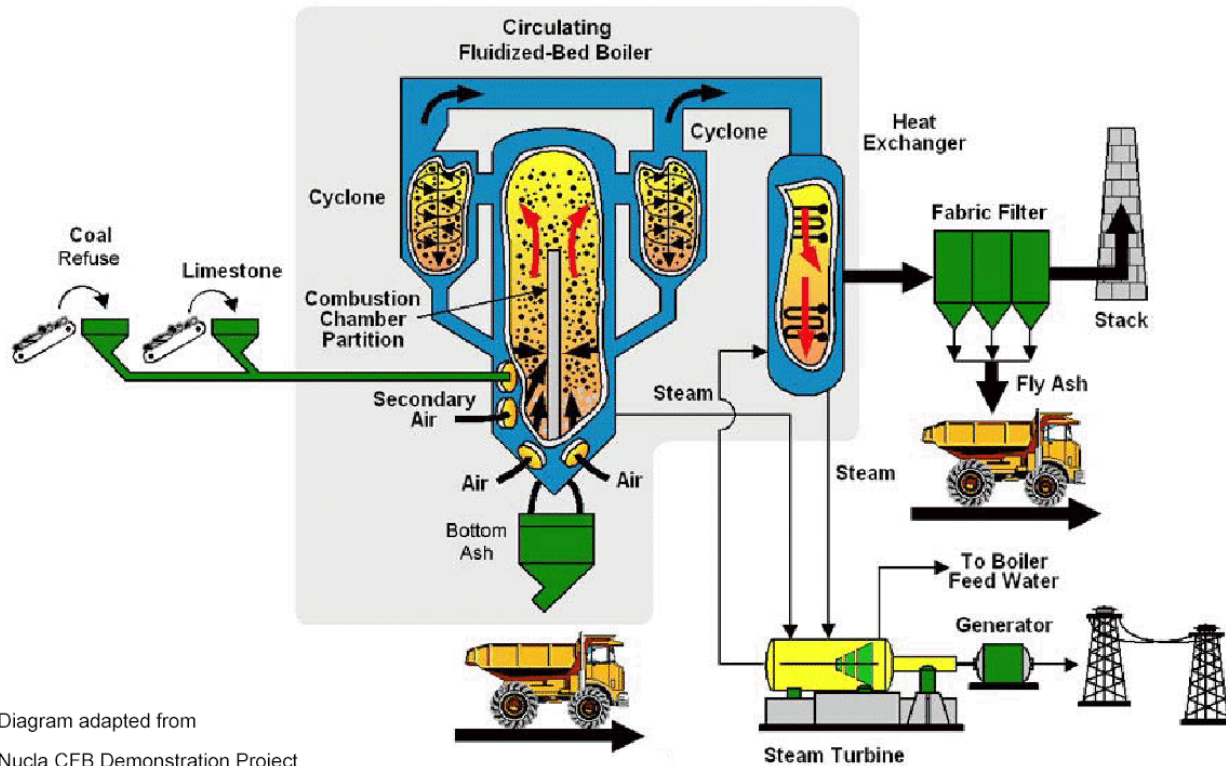
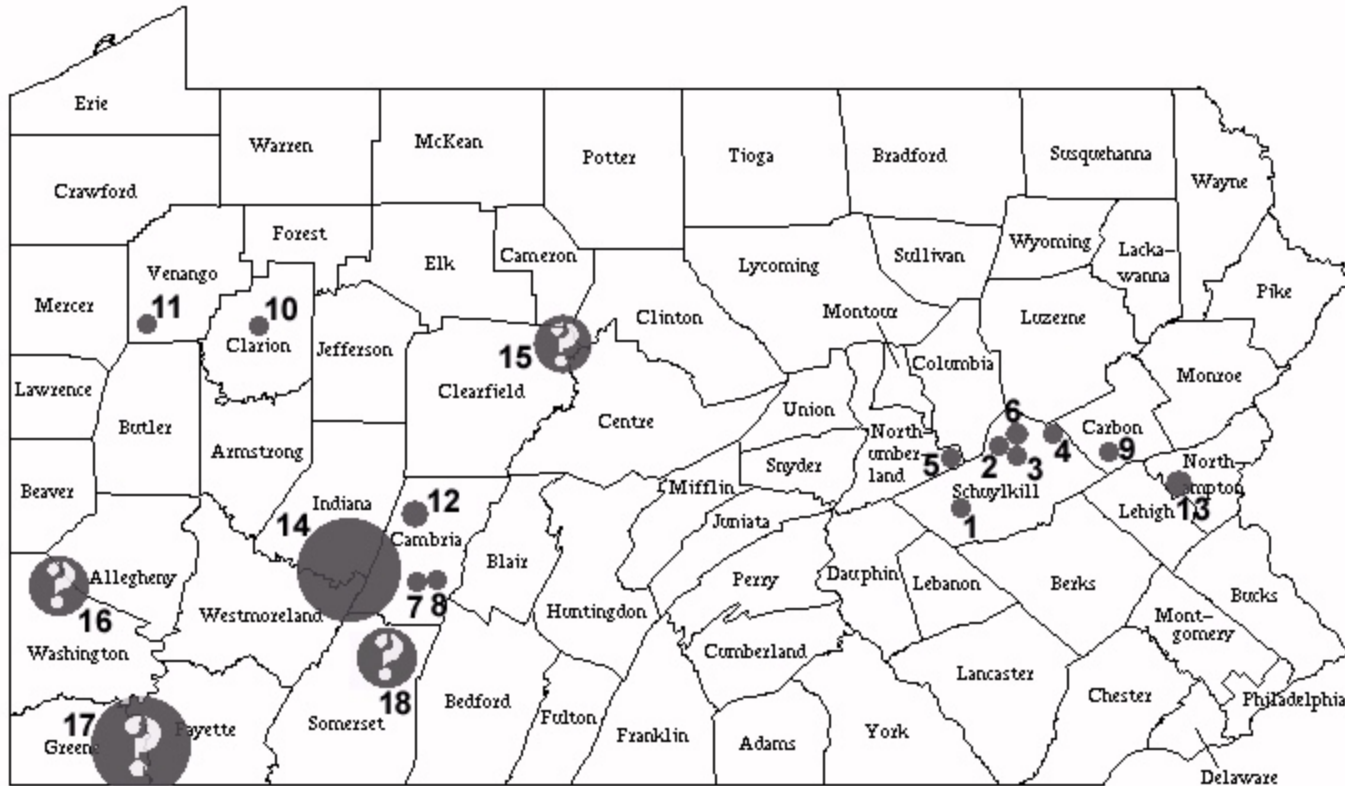


Diagram adapted from  
Nucla CFB Demonstration Project

# Waste Coal Burners in Pennsylvania



1. Westwood
2. Gilberton - Rich Memorial
3. Wheelabrator-Frackville
4. NEPCO - Kline Twp Cogen
5. Mount Carmel Cogen
6. St Nicholas Cogen
7. Ebensburg Power Co
8. Cambria CoGen
9. Panther Creek
10. Colmac - Piney Creek

11. Scrubgrass
12. Colver
13. Northhampton Generating
14. Seward

## Proposed Facilities:

15. Sithe / River Hill Power
16. Robinson Power - Beech Hollow
17. Wellington Development - Greene Energy Resource Recovery Project
18. Sithe Global Power LLC – Somerset Power

# Poor Economics

- Large volumes of low-Btu fuel requires extra handling (more fuel; more ash)
- Higher maintenance and repair costs (\$1-3 million/year in repairs for smaller plants)
- More complicated than normal pulverized coal power plants



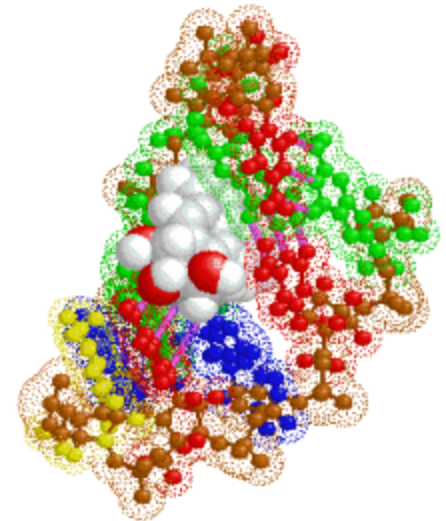
# Creating Cancer

**Polycyclic aromatic hydrocarbons (PAHs):** group of over 100 different chemicals that are formed as byproducts of combustion

Most PAHs are known to cause cancer in animals and are suspected to cause cancer, birth defects and a wide variety of other health problems in humans.

Fluidized bed combustors form PAH more than normal coal burners due to:

- use of limestone injection
- low oxygen levels
- lower combustion temperature range
- low-rank coal
- higher sulfur levels in fuel
- higher chlorine levels in fuel



Benzo(a)pyrene

# **Particulate Matter (soot)**

**Washington and Allegheny Counties have unhealthy levels of fine particulate matter (soot) in the air, contributing to heart attacks, asthma, breathing problems, premature death and other health problems.**

**New federal rules went into effect on April 5<sup>th</sup>, 2005 requiring Pennsylvania to develop a plan to reduce these to “safe” levels by 2010 or 2015.**

**The permit was issued on April 4<sup>th</sup>, avoiding these new rules applying to this power plant.**



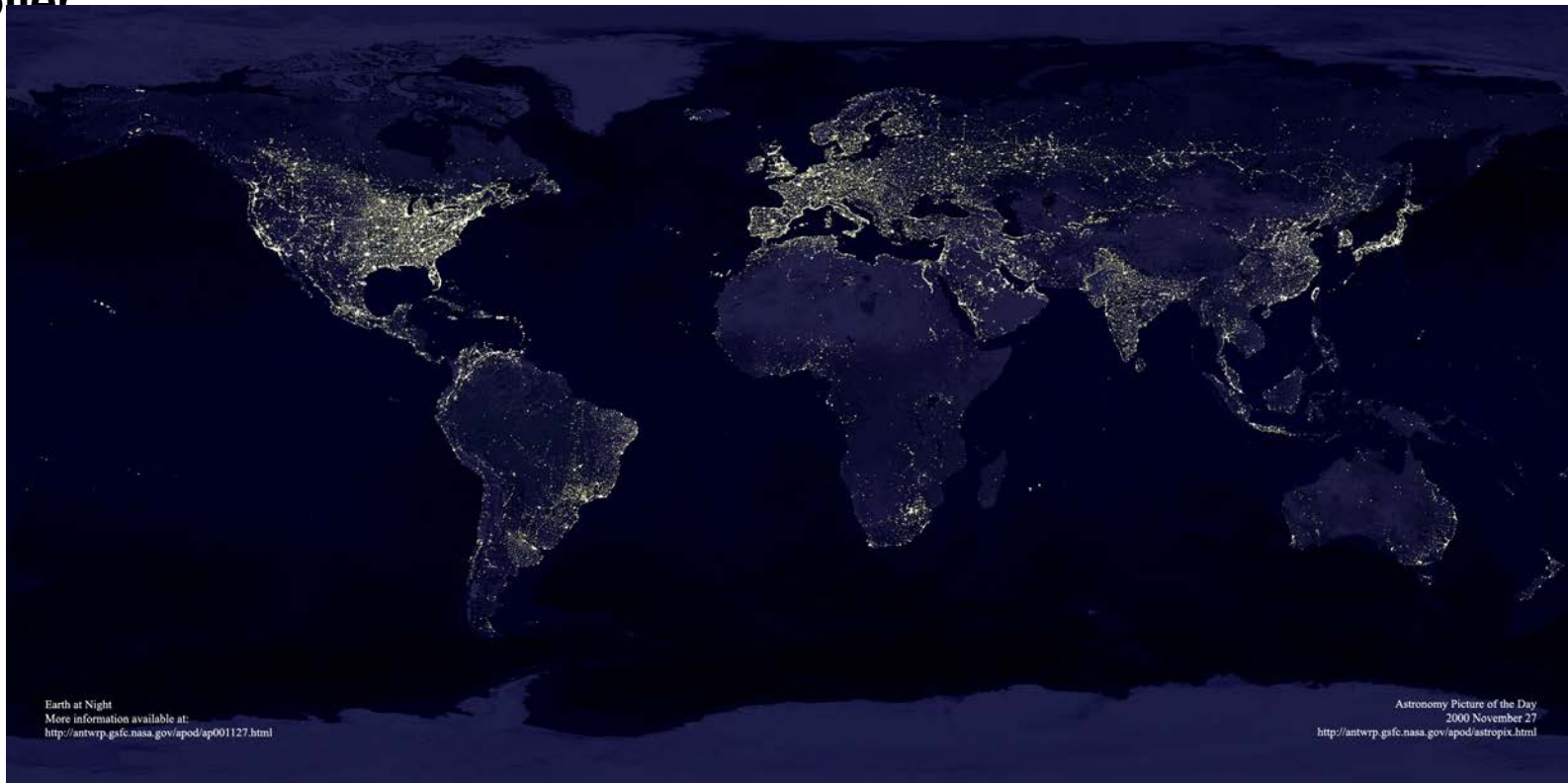


# Global Warming / Climate Change

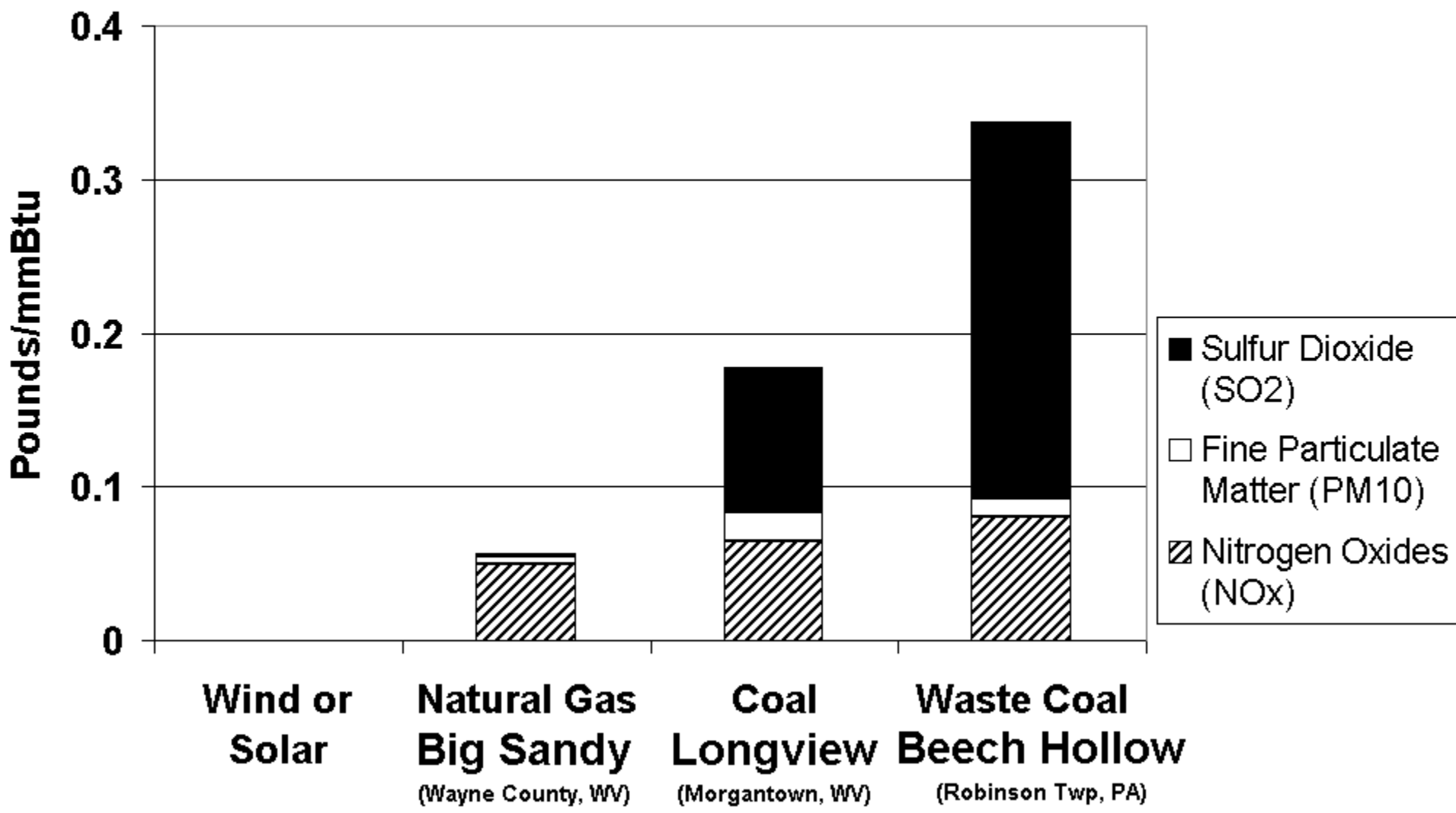
Pennsylvania already emits 1% of the entire world's greenhouse gas emissions.

“N<sub>2</sub>O has a Global Warming Potential 296 times that of CO<sub>2</sub>.”

“N<sub>2</sub>O is emitted from fluidized bed coal combustion... N<sub>2</sub>O emission from the FBC is equivalent to... **an increase of about 15% in CO<sub>2</sub> emissions for an FBC boiler**”



# Pollution Emissions Limits for New Power Plants



# Air Pollution: 36% Dirtier than New Coal Plants

	Beech Hollow	Longview	% increase
<b>Air Pollutant</b>	data below is in pounds per trillion Btu		
Sulfur Dioxide (SO <sub>2</sub> )	245,000	149,984	+63%
Nitrogen Oxides (NO <sub>x</sub> )	80,000	79,980	+0%
Fine Particulate Matter (PM10)	12,000	17,991	-33%
Carbon Monoxide	150,000	110,075	+36%
Volatile Organic Compounds	6,000	4,007	+50%
Sulfuric Acid	3,000	7,491	-60%
Hydrochloric Acid	2,900	0.35	+828,433%
Hydrofluoric Acid	2,540	0.35	+725,580%
<b>Total</b>	<b>501,440</b>	<b>369,530</b>	<b>+36%</b>
<b>Fuel</b>	<b>Waste Coal</b>	<b>Coal</b>	
<b>Proposed County / State</b>	Washington / PA	Monongalia / WV	

# What will be coming out of the smokestack?

## LACK OF TESTING

Technology exists to continuously monitor the following pollutants. This technology will NOT be used for:

**Sulfuric Acid**

**Hydrofluoric Acid**

**Hydrochloric Acid**

**Volatile Organic Compounds**

**Arsenic**

**Beryllium**

**Lead**

**Cadmium**

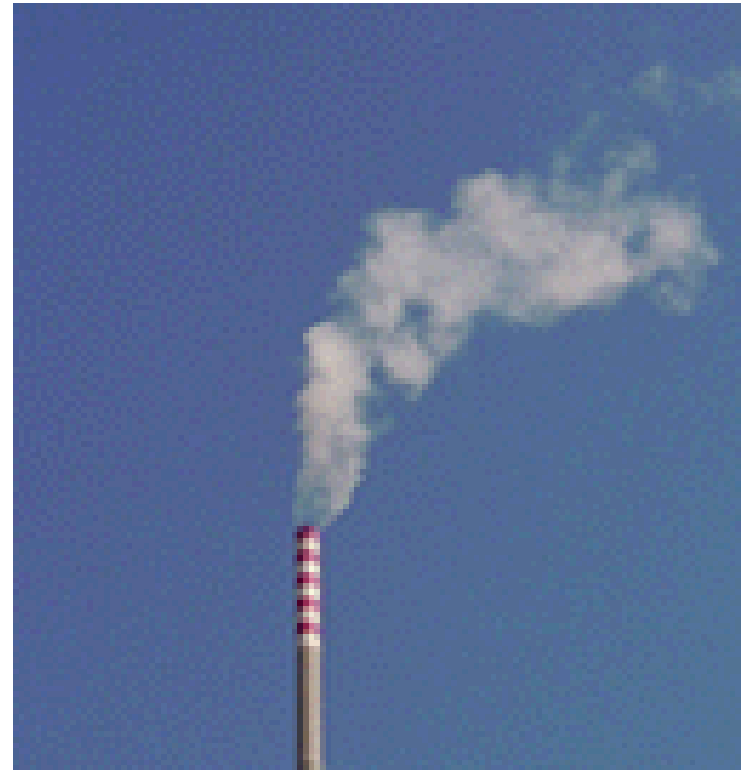
**Chromium VI**

**Nickel**

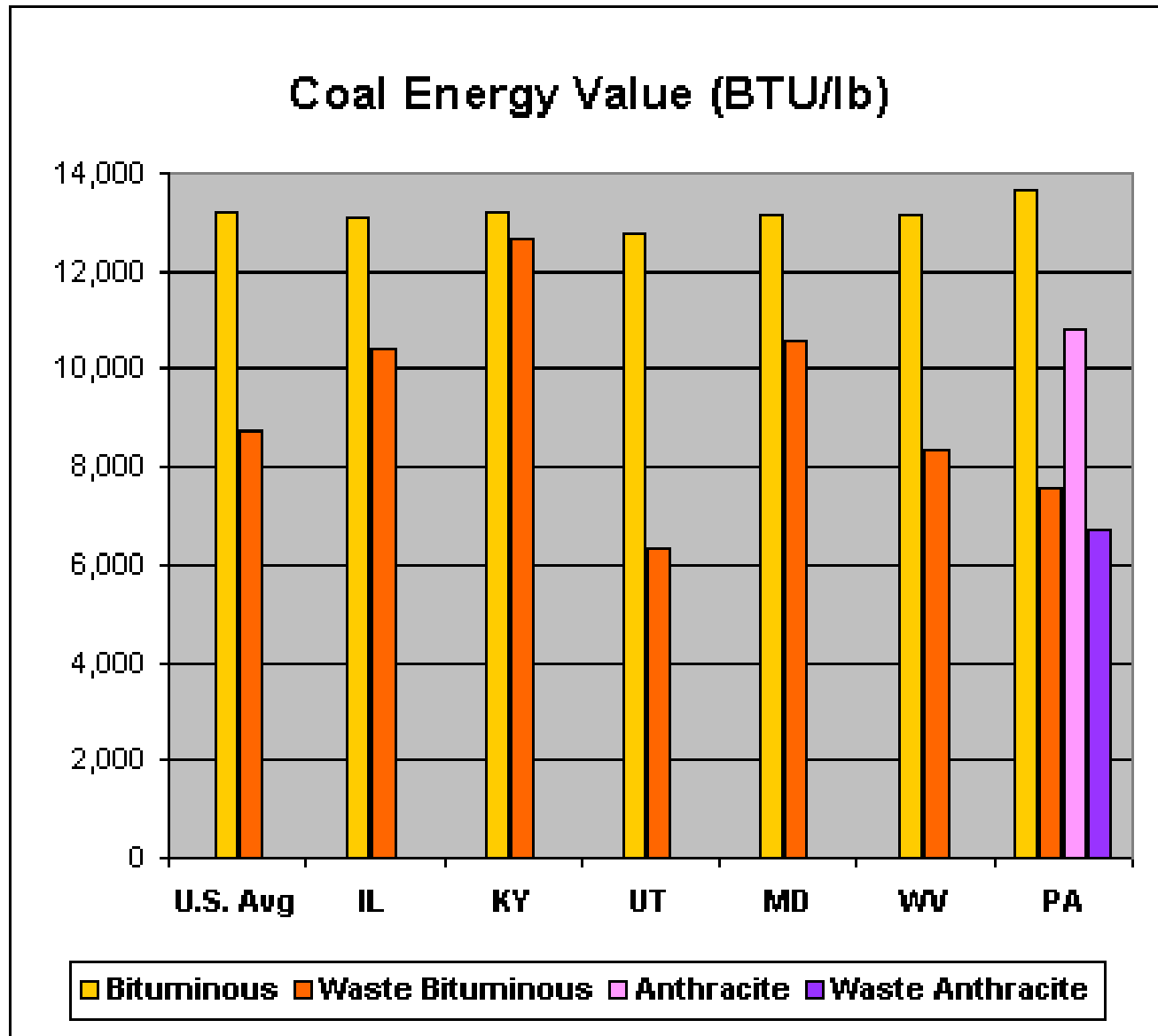
**Ammonia**

**Dioxins & furans**

**Polycyclic Aromatic Hydrocarbons (PAHs)**



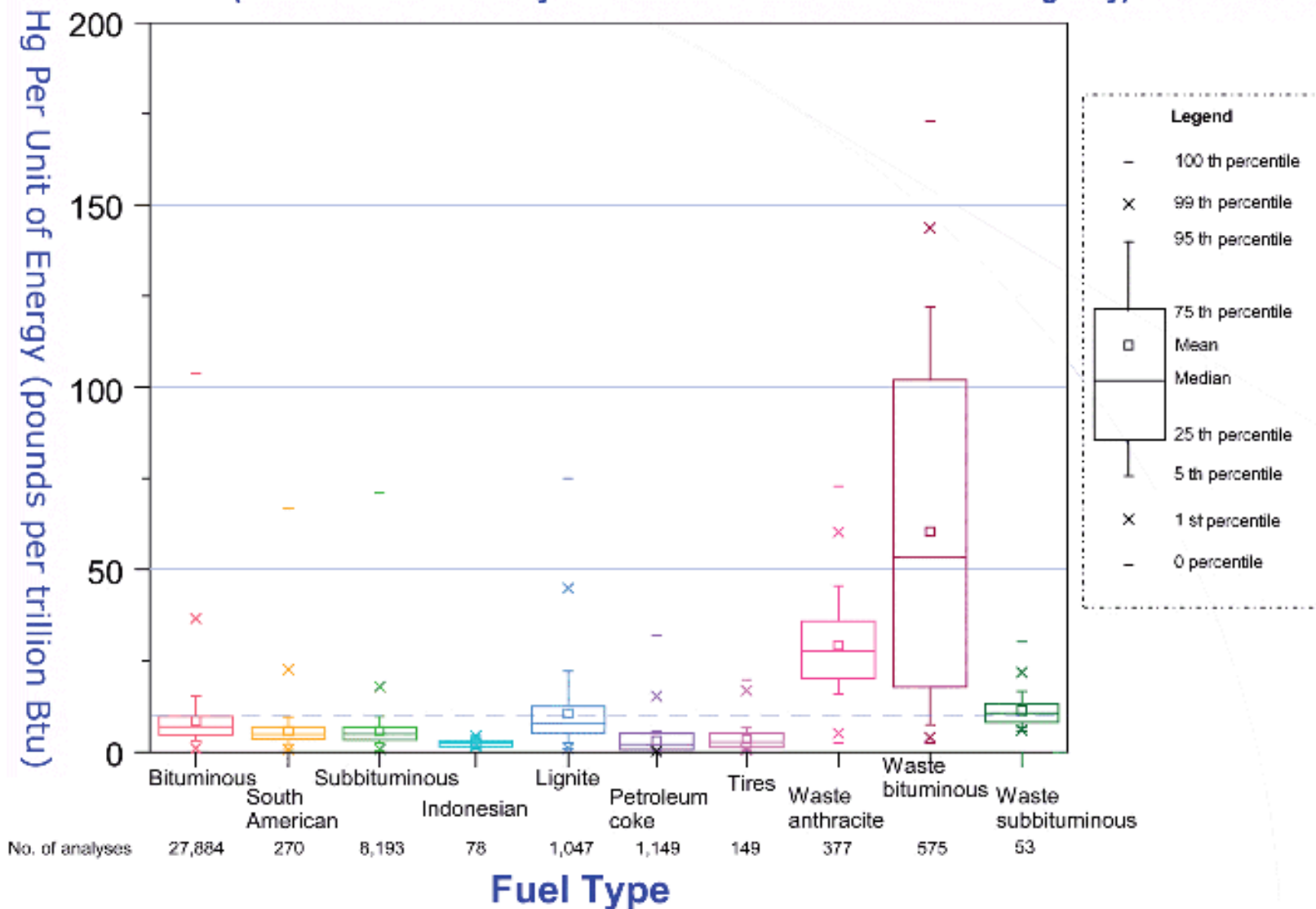
# Waste Coal: 55% the Energy Value of Coal



# Waste Coal: Highest Mercury Content of Any Fuel

## Mercury (Hg) Content in Fuels

(1999 Data Collected by the U.S. Environmental Protection Agency)

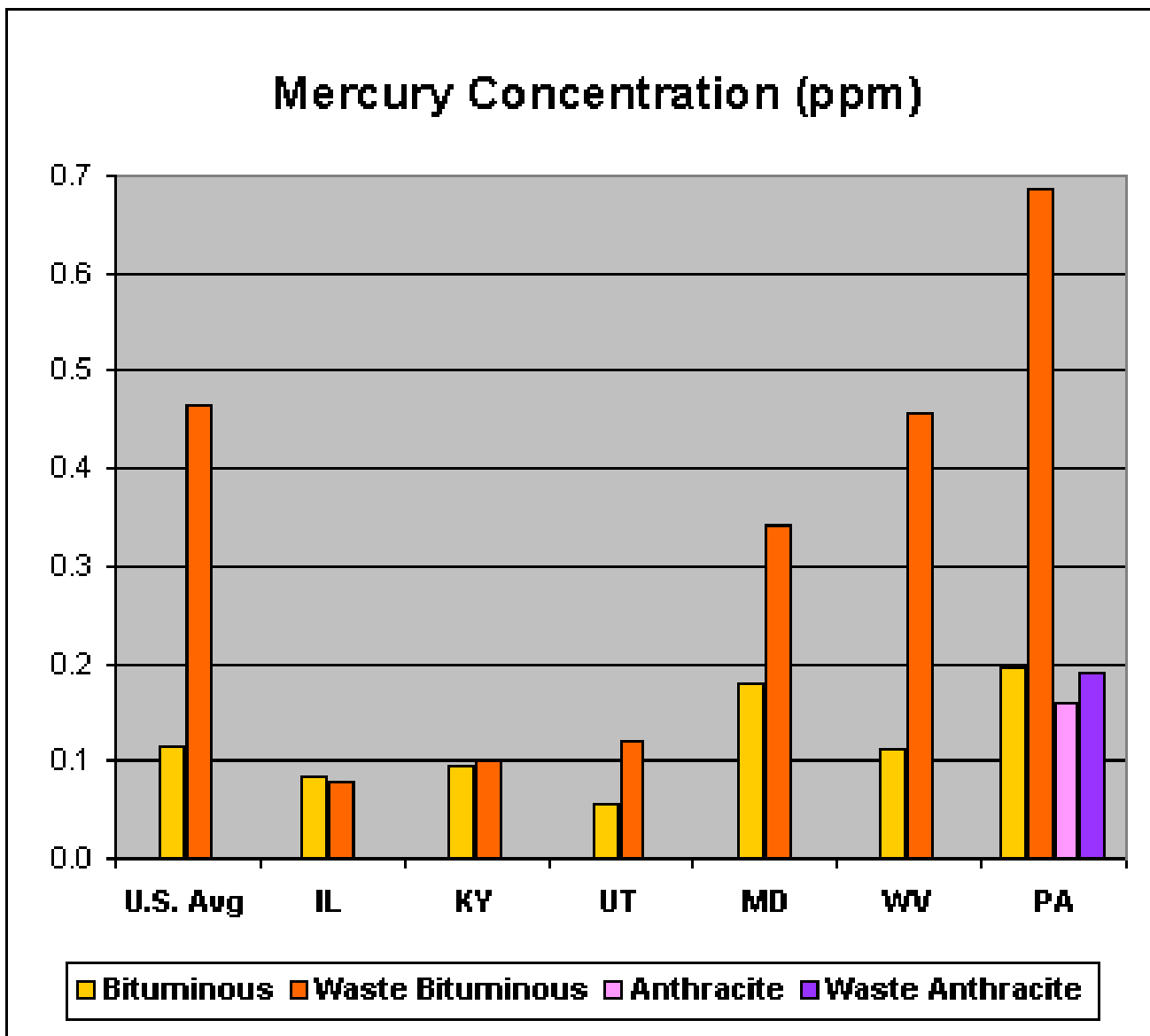


# Low Energy Value = More Ash

100 tons of waste coal → 85 tons of waste coal ash

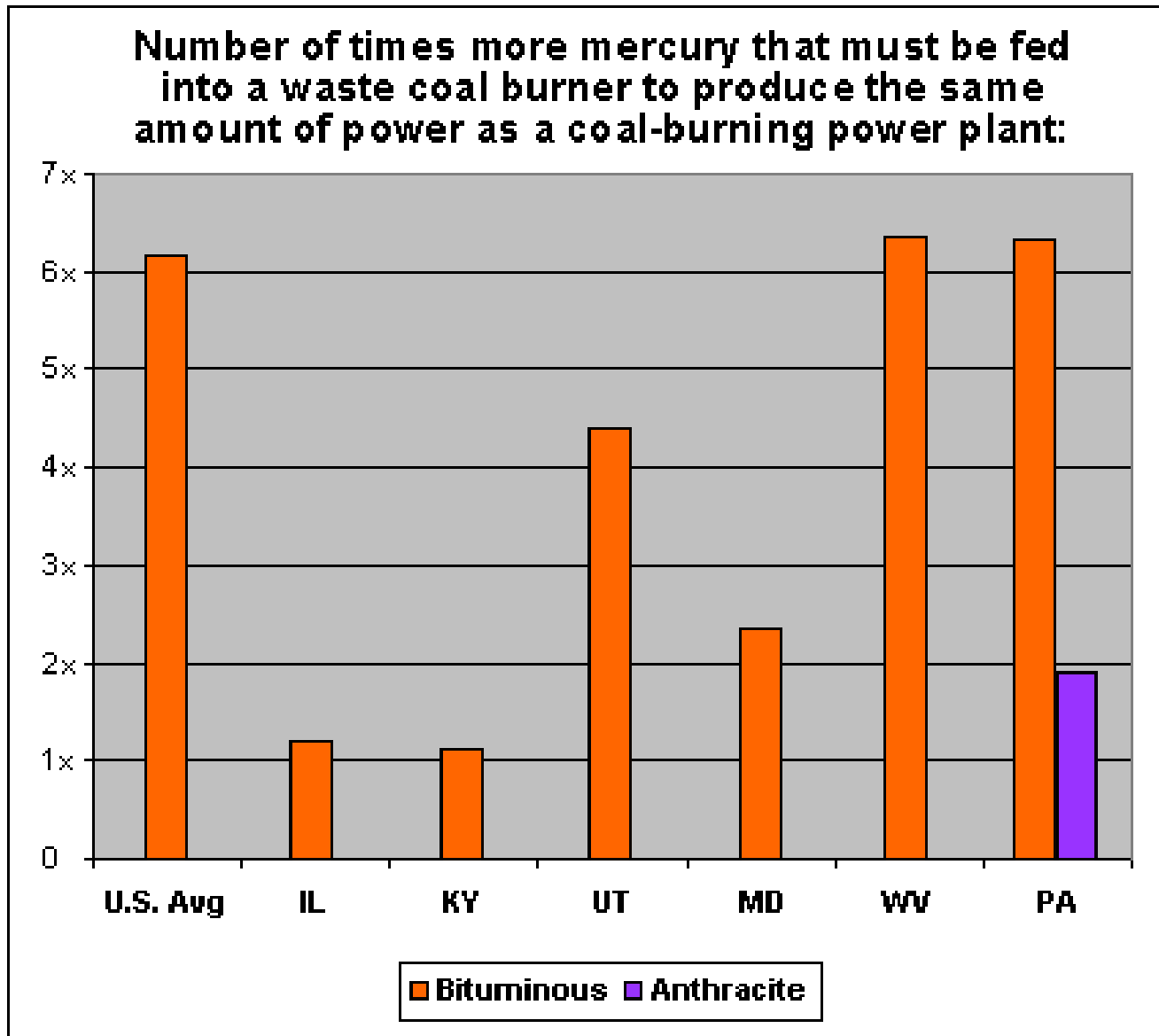


# Western PA Waste Coal Most Contaminated





# Most Mercury Per Megawatt: 6.3 Times More than Coal



# Waste Coal Ash Leaches & Damages

## Groundwater

### Revloc Mine

- arsenic
- iron

### Kedron Mine Pilot Project

- sulfate
- iron
- aluminum
- manganese
- lime leached out at toxic levels

### Ernest Mine

- arsenic
- aluminum
- nickel
- iron
- manganese
- acid drainage problem got worse (acidity more than tripled)

### Job 54 Mine

- sulfate
- iron
- manganese
- acid drainage problem got worse

### Albright Mine

- arsenic
- selenium
- molybdenum

### Laurel Land Development / McDermott Mine

- spring damaged

### Maple Mine / Rail Yard Site

- arsenic
- cadmium
- sulfate

# The Alternatives for Waste Coal

- Filling Abandoned Mines
- Grading and Revegetating
- American Beachgrass

**Before**



PHOTO: ROBERT R. BOWERS

**After**



**FOR MORE INFO:**

**[www.TruthAboutGov.org](http://www.TruthAboutGov.org)**

**(waste coal in SW PA)**

**[www.EnergyJustice.net](http://www.EnergyJustice.net)**

**(waste coal & clean energy solutions...)**

**[www.ActionPA.org/energy/](http://www.ActionPA.org/energy/)**

**(PA's Dirty Energy Legacy)**

**[www.ActionPA.org/cleanenergy/](http://www.ActionPA.org/cleanenergy/)**

**(PA's New "Alternative" Energy Law)**

# Jobs in Energy Sector

For every \$1 million invested, how many jobs are created?

**21.5 Energy Efficiency** (Apollo Alliance)

**5.9 Renewable Energy** (Gamesa wind production plant in Ebensburg)

**0.25 Waste Coal** (GERRP)

“Energy efficiency is far more labor intensive than generation... These jobs include installation, ongoing operations and maintenance of building systems, and new manufacturing to meet the increased demand for energy efficient appliances and building systems.” (*New Energy for America – The Apollo Jobs Report: Good Jobs & Energy Independence*)



# **We Don't Need the Electricity**

**West Virginia and Pennsylvania are the 1<sup>st</sup> and 3<sup>rd</sup> largest exporters of electricity.**

**Pennsylvania produces 45% more electricity than is consumed in-state. West Virginia produces more than 3 times more power than is used in-state.**

**Exports from these two states alone are enough to meet the needs of all 16 states east of the Rocky Mountains which don't produce enough of their own electricity.**





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