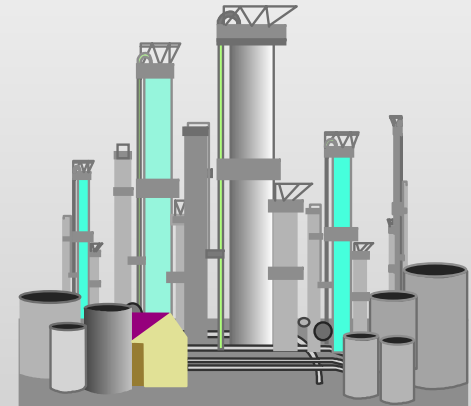


Using Petroleum Coke (Petcoke) as Fuel Air Enforcement



What is Petcoke?

- Waste product of the refining industry.
- Residue of Coker





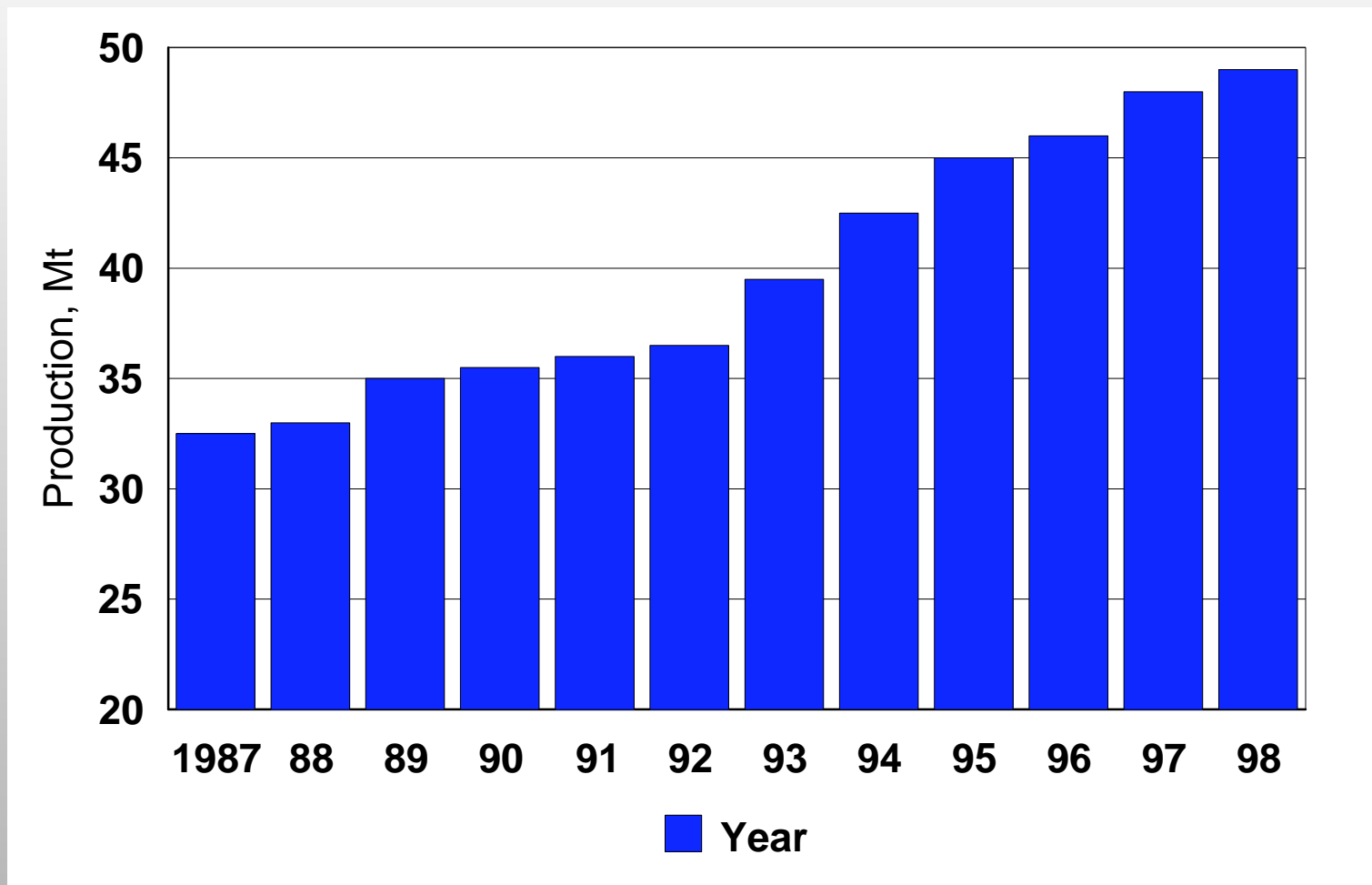
Petcoke Properties

- High in heavy metals
- Higher heat content than coal
- High Sulfur
- Varying Hardness
- Cheap Fuel
- Low in Volatility



Increased Petcoke Production

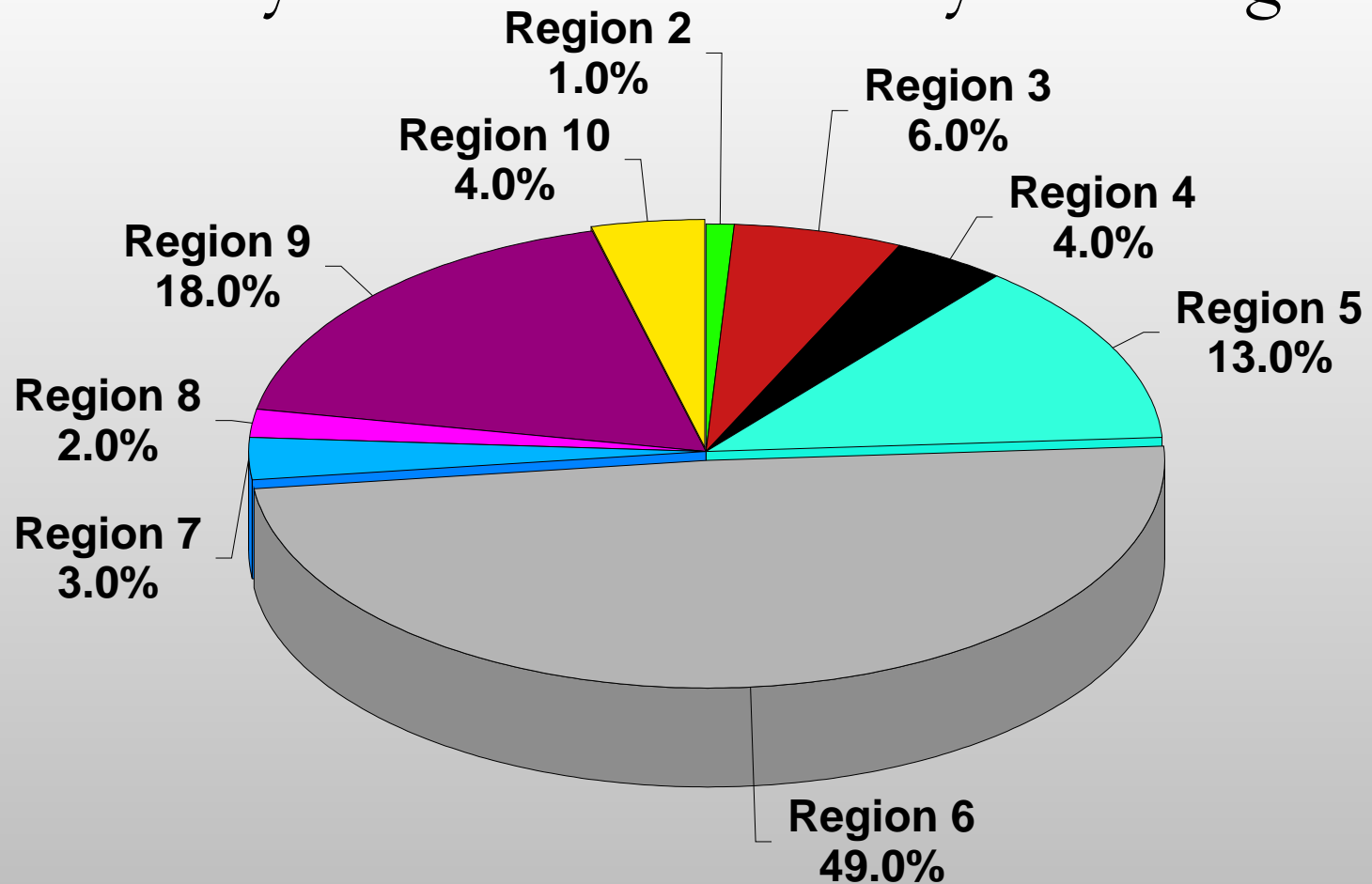
 World Petroleum Coke Production



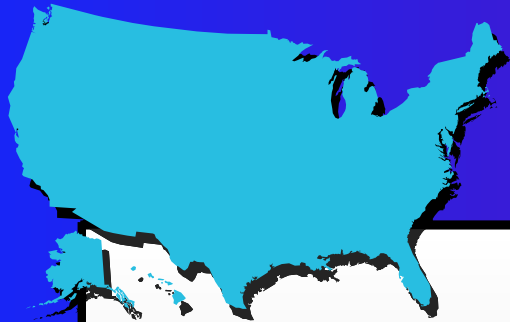


Where is Petcoke Produced?

Refinery Coker Production by EPA Region



2002 U.S. Petcoke Production Capacity: 2,287,000 Barrels per Day



Who Uses Petcoke as a Fuel?

■ Cement Kilns:

- Consumes up to 40% of all petcoke nationally.
- Utilizes petcoke to replace natural gas and coal in kilns.

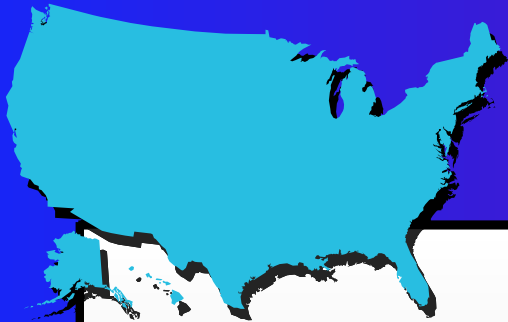
■ Utility Boilers:

- Cyclone and CFB boilers can replace up to 20% of their coal with petcoke.

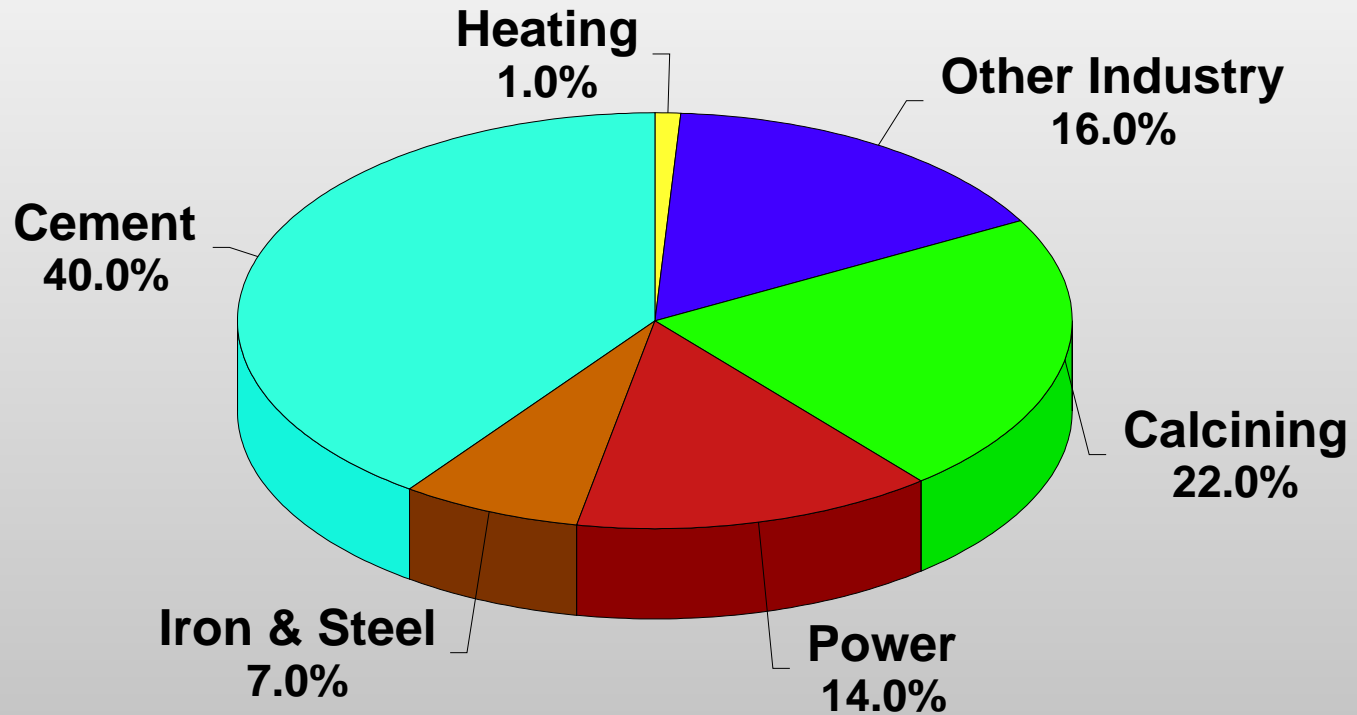
■ Steel Coke Ovens:

- Adds in high sulfur petcoke with input coal.

■ Many Others: Steel electric arc furnaces, refinery heaters, calcium carbide mfg., etc.



Petcoke Markets

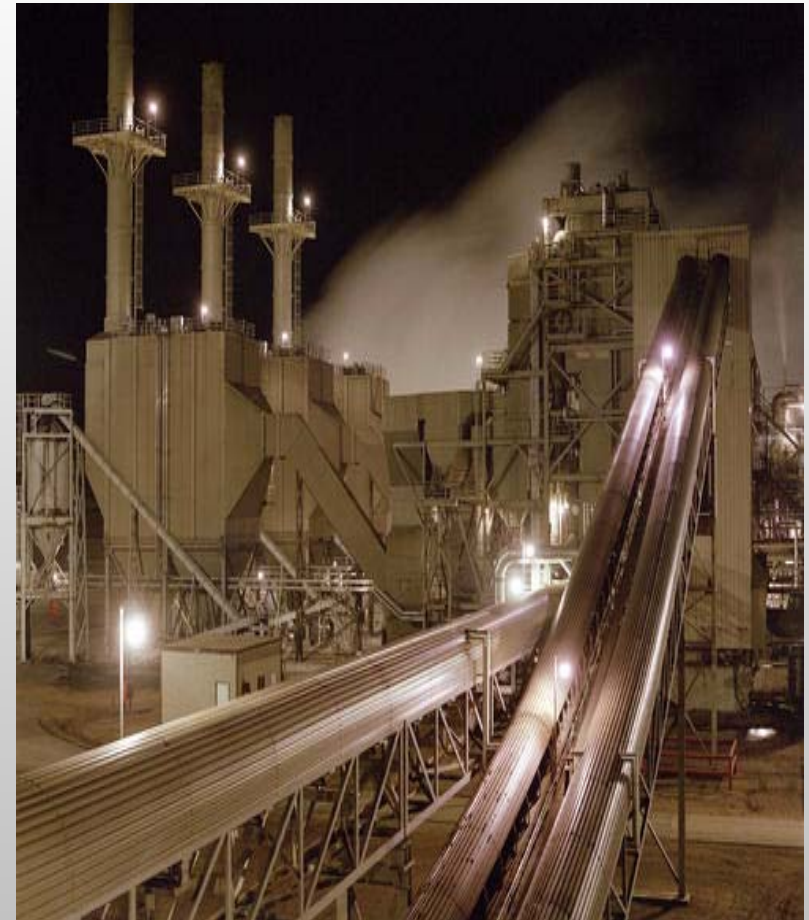


Utility Companies Who Utilize Petcoke

(List Not Exhaustive)



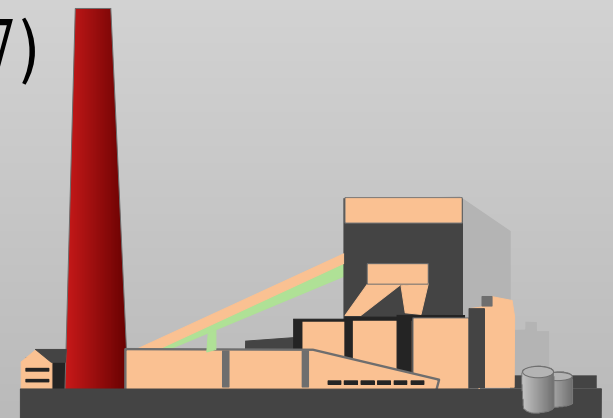
- New York State E & G (Region 2)
- Pennsylvania Power Co. (Region 3)
- Florida Power Corp. (Region 4)
- Lakeland Electric & Power (Region 4)
- Jacksonville Electric Authority (Region 4)
- ComEd (Region 5)
- Indianapolis Power & Light (Region 5)
- San Antonio Public Service (Region 6)
- Houston Lighting & Power (Region 6)
- IES Utilities (Region 7)
- Los Angeles Dept. of Water & Power (Region 9)





Cement Companies Who Utilize Petcoke (List not exhaustive)

- Lehigh Portland Cement (Regions 2,3,4,5, 6 and 9)
- Coplay Cement (Region 3)
- Essroc Cement (Regions 3 and 5)
- Lafarge Corp. (Regions 3,4,5,6,7 and 10)
- Holcim Cement (Regions 4, 5, 6, 7, and 8)
- Lonestar Cement (Region 5 and 6)
- Ash Grove Cement (Regions 6,7,8 and 10)
- Continental Cement Co. (Region 7)
- Southwestern Cement (Region 9)
- Calaveras Cement (Region 9)
- Mitsubishi Cement (Region 9)





Environmental Issues

▣ Increases SO_2 Emissions:

▲ High sulfur in petcoke will convert to SO_2 .

▣ May increase PM-10, NO_x , SO_3 & H_2SO_4 :

▲ Higher heat input may cause additional "hot spots," creating thermal NO_x .

▲ High Vanadium levels in petcoke will oxidize some SO_2 into particulate SO_3 .

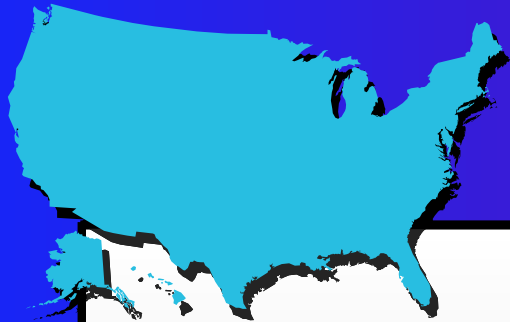
▲ Additional SO_3 may convert to H_2SO_4 .



NSR/PSD Theory

■ Regulatory Hook:

- If the source was not designed to burn petcoke before 1975, the intent of the regulations show that a source cannot use the capable of accomodating exemption to avoid PSD.
- Physical changes made to the unit due to petcoke can strengthen the position.



Regulatory Hooks

☐ PSD

- ▲ Physical or operational changes to combustion and/or crushing/grinding equipment may trigger PSD.

☐ NSPS

- ▲ Physical or operational changes to burn petcoke may trigger NSPS.

☐ SIP

- ▲ SIP limits may be exceeded if petcoke significantly increases emissions.

☐ Permit Conditions