



EXPLORING COAL

5TH-8TH GRADE

GROUP ACTIVITY

- Split into to teams of 3 or 4 (nominate one person to take down answers)
- Answer these questions:
 - Where does electricity come from?
 - What different energy resources provide us with electricity?
 - Can you name 5 states that produce Coal? (Hint: there are 26 total)
 - What are the two main types of Coal mining?
 - True or False: Coal keeps electric bills cheaper in homes and businesses?
 - Name 2 ways we can transport Coal?
- Good Luck! Team that scores the highest will win a neat prize!

THE SCIENCE OF COAL

- Coal is made largely of carbon but also features other elements such as hydrogen, oxygen, sulfur, and Nitrogen.
- Coal has long been burned to create electricity and heat. The use of coal is increasing every year, in 2006 the world consumed over 6,000,000,000,000 kilograms of coal!
- Coal is the world's largest source of energy for the production of electricity.
- Coal is converted to electricity by being burned in a furnace by a boiler. The boiler water is heated until it becomes steam then spinning turbines and generators to create the electricity.
- We have over 250 years of Coal reserves right here in Ohio.



COAL AND GOVERNMENT

- Coal is regulated by both State and Federal Government.
- Many departments of the government regulate Coal mining such as EPA, Department of Natural Resources, and the Army Corps of Engineers.
- Coal is a heavily regulated industry with a lengthy permitting process.
- The Coal industry strives to work hand and hand with the Government to ensure safety of the mining process while being able to produce affordable energy for the American people.



COAL AND THE ENVIRONMENT

- The United States' electric utilities have invested more than \$50 billion in new clean-coal technologies.
- According to the U.S. EPA, emissions of criteria air pollutants considered harmful to human health have decreased almost 40% in Ohio since 1970 – even though the overall consumption of electricity has more than doubled. The use of coal to generate electricity has tripled in that same period.
- Ohio is the driving force behind clean coal research and leads the nation in deployment of clean coal technologies, according to the Ohio Coal Development Office.



CLEAN COAL TECHNOLOGY



COAL AND THE ECONOMY

- The Coal industry directly and indirectly employs 33,000 Ohioans.
 - Do you know anyone that works with Coal?
- Coal is America's most affordable and reliable source of electricity. It is half the cost of other fossil fuels.
- Coal has low transportation costs for Ohio's electricity markets.



HOW DO WE MINE COAL?

- So how do we get the Coal from the ground?
- Two main types of Mining Coal:
 - Underground Mining
 - Surface Mining

Let's look at some pictures of Underground and Surface Mining!

UNDERGROUND MINING



UNDERGROUND MINING



UNDERGROUND MINING



SURFACE MINING



EVERYDAY USE OF COAL

- You probably don't think of it but what do we use everyday that is powered because of Coal?
1. Video Games
 - Because of Coal you can play your favorite video games such PlayStation or Xbox.
 2. TV
 - Because of Coal you can watch you favorite shows.
 3. Computers
 - Because of Coal you can do your homework or play your favorite computer games.



ANY QUESTIONS??



THANK YOU TO OUR MEMBER COMPANIES

- B & N Coal, Inc.
- Buckingham Coal Company Inc.
- East Fairfield Coal Company
- Hopedale Mining
- Kimble Clay & Limestone
- Oxford Mining Company, LLC
- Rosebud Mining Company
- Sands Hill Mining LLC
- Sterling Mining Corporation
- The Ohio Valley Coal Company
- Waterloo Coal Company