

Coal Mining

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History of Coal Mining

- The history of coal mining dates back to over 400 million years ago.
- Coal mining started in Midlothian, Virginia (near Richmond) in 1748.
- Coal machines were available in the 1880's.
- The oldest deep-mine facility is the Tower Colliery, located in the UK, in 1805.
- Surface mining was started in 1912.

History of Coal Mining (continued)

- England was the first to realize the value of coal.
- Chinese people were the first to use coal in large amounts.

Types of Mining

- Strip mining
- Mountaintop removal
- Long-wall mining
- Continuous mining
- Conventional mining
- Short-wall mining
- Surface mining

Strip Mining



A picture of a strip mines in Southwest Virginia.

Strip Mining

- Strip mining is done when the coal seams are near the surface of the earth (also called surface mining.)
- Underground mining is a type of surface mining, taking place at the top of a mountain.
- This type of mining is mostly in the Appalachian region.

Conventional Mining



A picture of the blasting of a mines,
Known as conventional mining.

Conventional Mining

- Accounts for less than 5% of underground production in the U.S.
- Explosives are used to break up the coal seam into parts.

Continuous Mining

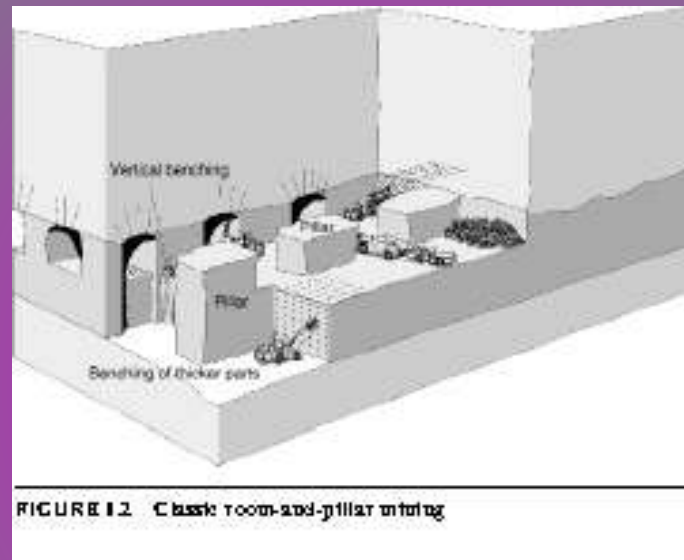


The machine that scrapes the coal seams with its rotating wheel of blades.

Continuous Mining

- A machine is used to obtain the coal.
- The machine has a large rotating steel drum equipped with teeth that scrape coal from the seam of the mines.
- Accounts for more than 2/3% of underground production.
- Uses the room and pillar method.

Room and Pillar Method



Room and Pillar in the mines.

Room and Pillar Method

- Mines are cut into rooms.
- Rooms are usually between 20-30 foot.

Short Wall Mining



Trucks receiving coal using short wall mining.

Short Wall Mining

- Accounts for less than 1% of deep coal production in the world.
- The miner shears coal panels into sections, which are about 150 to 200 feet wide and more than $\frac{1}{2}$ a mile long.

Long Wall Mining



Machine getting coal by using the long wall method.

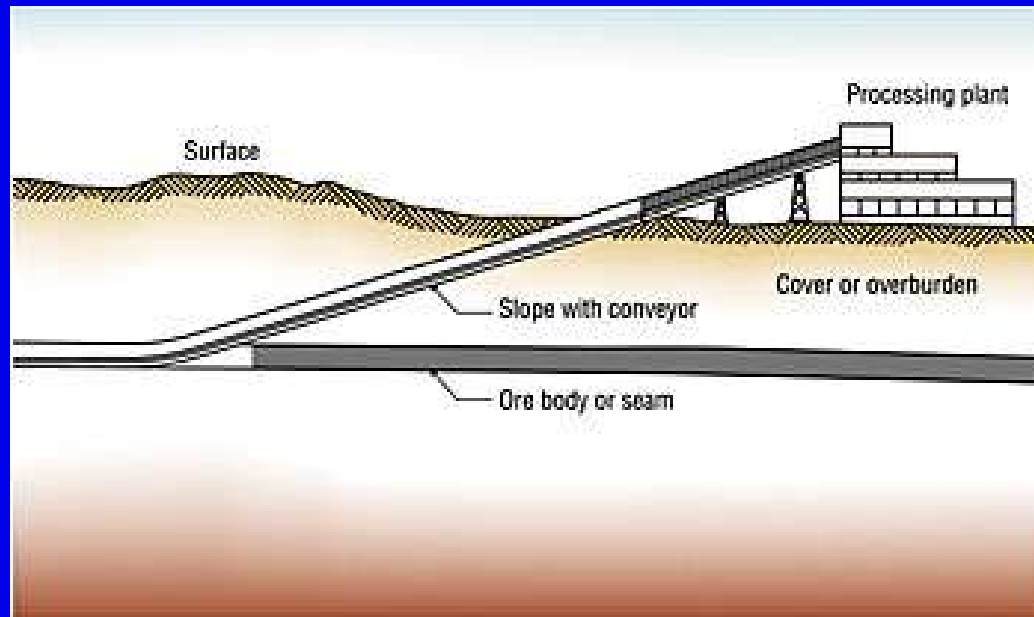
Long Wall Mining

- Accounts for 20% of production in the world.
- 80% of coal produced in the world can be obtained using this method.
- Accounts for 50% of underground production.
- Miner shears coal panels into larger sections than those in the short wall method.
- Explosives are used after the coal is received in order to receive the rest of the coal.

Different Kinds of Mines

- Drift mine
- Slope mine

Drift Mine

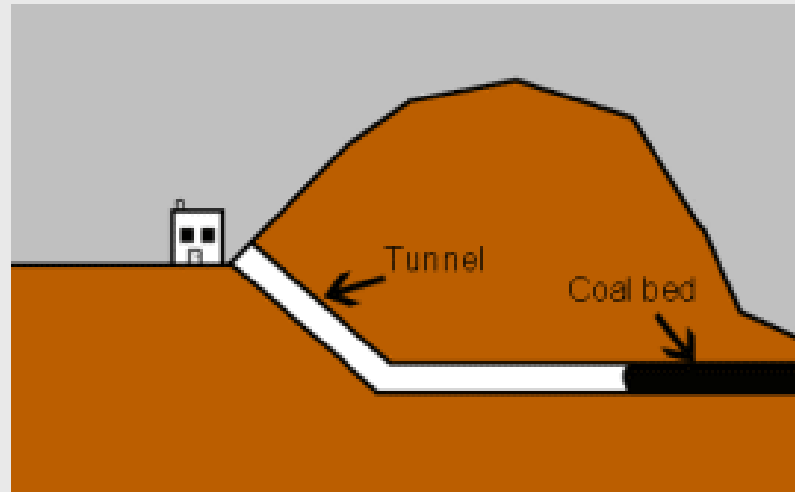


Model of a drift mine.

Drift Mines

- The mine is entered by driving level openings call drifts, to the deposit of coal.

Slope Mine



Model of a slope mine.

Slope Mines

- The openings are driven in a sloping direction to follow the seam that lies in the hill.

Fatalities

- Thousands of miners die every year in less developed countries rather than in large, more developed ones.
- China has the highest rates.
- China also has the highest number of coal mining related deaths in the world.
- Many happen because of the safety conditions and hazardous gas.

Fatality Reports

- A 2004 poll shows the relation of deaths between China and U.S.:
 - China – 6,027
 - U.S. – 28

MSHA and SMCRA

- MSHA – Mine Safety and Health Administration passed laws for the mines and miners, making sure that certain gases are not exposed to the miners.
- SMCRA – Surface Mining Control and Reclamation Act of 1977 was passed in response of negative land effects of coal mining and abundance of abandoned mines.

Change in Miners

- In 1980 there were 220,000 miners in the country. Today there are less than 100,000 miners.
- In 1980 there was 800,000 tons of coal produced in the country. Today there is over 1 billion tons of coal produced.
- Even though the number of miners went down the coal production increase drastically.

Change in Miners (continued)

- 50 years ago there was a reported 335,000 workers and 7,200 mines.
- Now there are 104,824 workers and 2,000 mines.
- Between the years 1970 and 2004 there was an 83% increase of production in coal industry.

Conclusion

- Although mining is a very dangerous job, it is a very important thing in today society.
- It is very much needed all around the world and Southwest Virginia is a very important place for the production of this.