

Return to [Primary Lesson Plans](#)

Title: From Where Does Coal Come?

Level: Primary - Middle (2 - 8)

Time: Varies according to age/level of students

KERA Goals: 1.2, 1.3, 1.5 - 1.9, 2.1, 2.7, 5.1

Objective:

1. Be able to explain the sources of coal.

Materials:

Transparencies of:

Earth's layers

Surface mining

Shaft mining

One chocolate chip cookie per student ("Chunky Chips-Ahoy" cookies work well for a store bought cookie)

Box of toothpicks

One napkin for each child

Butcher paper for chart

Crayons

Activity:

1. Discuss how the Earth is formed in layers. Show transparency #1 (sedimentary layers). Explain that coal is one of the layers formed millions of years ago.
2. Divide the class into groups of four to five students. Ask them to discuss and to list ways of extracting coal deposits from the ground. Share ideas, then show transparencies #2 (coal mining—surface) and #3 (coal mining—underground).
3. Give each student a cookie and a napkin. Explain that the cookie represents the whole Earth. The tan batter represents land while the chocolate chips are the coal deposits. The visible chips are the deposits which are located on or near the Earth's surface. Have the groups discuss the difficulty of mining the visible coal deposits (chips) versus any hidden inside of the land (batter). How might this mining hurt the environment?
4. Instruct each student to count the number of visible coal deposits. One person can record the numbers from each member of the group. Compile the information from the whole class on a bar and/or histogram called (see Figure #1) "Number of Visible Coal Chunks."
5. Next have each student pick the cookie apart with a toothpick and place "coal" deposits in one pile and "land" in another. Compare the piles. What does it mean if the chip pile is larger than the tan batter pile? Have you made a mess of the land? Which cookies would seem better to "mine" first?
6. Using a histogram similar to Figure 2, have each child mark an "x" under the number of his/her coal deposits in the total cookie. How does the total number of deposits compare with the number of surface deposits? Have the children subtract the surface amount from the

total amount. (Total amount of deposits - surface amount of deposits = interior amount of deposits.)

7. Brainstorm the effects on the land (tan particles) of mining the surface coal deposits as compared to the deposits below the surface. Have each group write a story about what would happen to the Earth, trees, and wildlife when real underground coal was mined.

8. Decide how you could use the coal that is mined, and make a list of the ways. Share your list with the rest of the class.

Extension Activities:

1. Prepare individual clear cups of Jello 1-2-3 (which will form in layers) and discuss how this could compare to the layers of the earth.

2. Determine which places in Pennsylvania and in other states have the largest amount of coal. Which places have the smallest amount?

3. Make a layered terrarium to demonstrate the layers which can be compared to layers in the earth's crust.

Evaluation/Conclusion:

1. Which of the two methods of mining coal would take the most time? Why?

2. Which of the two methods of mining coal would cost the most? Why?

3. Which of the two mining methods would probably disrupt the environment the most? Why?

4. If you were the head of a mining company, tell which method you would choose and why.



Figure 1

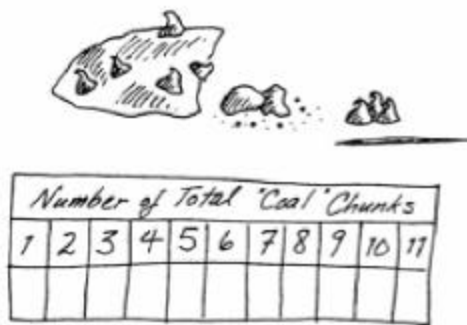
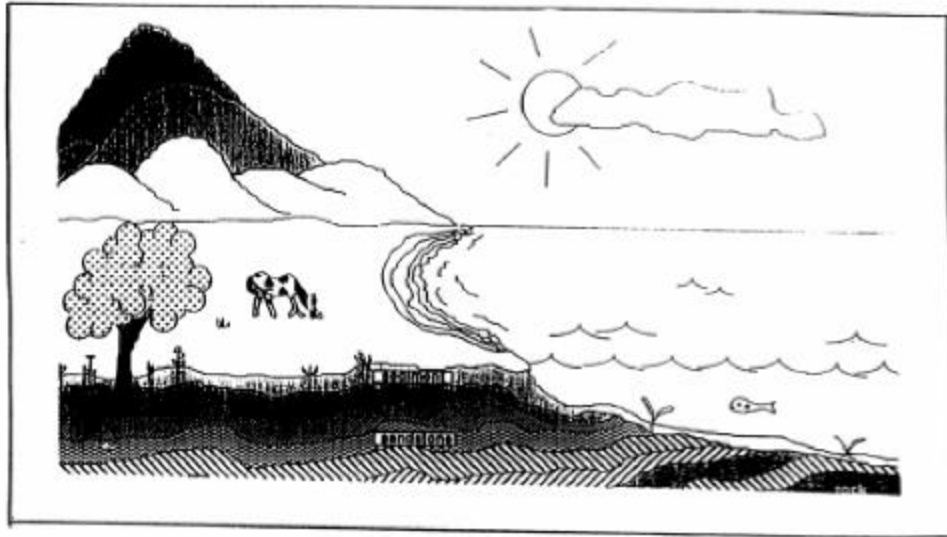
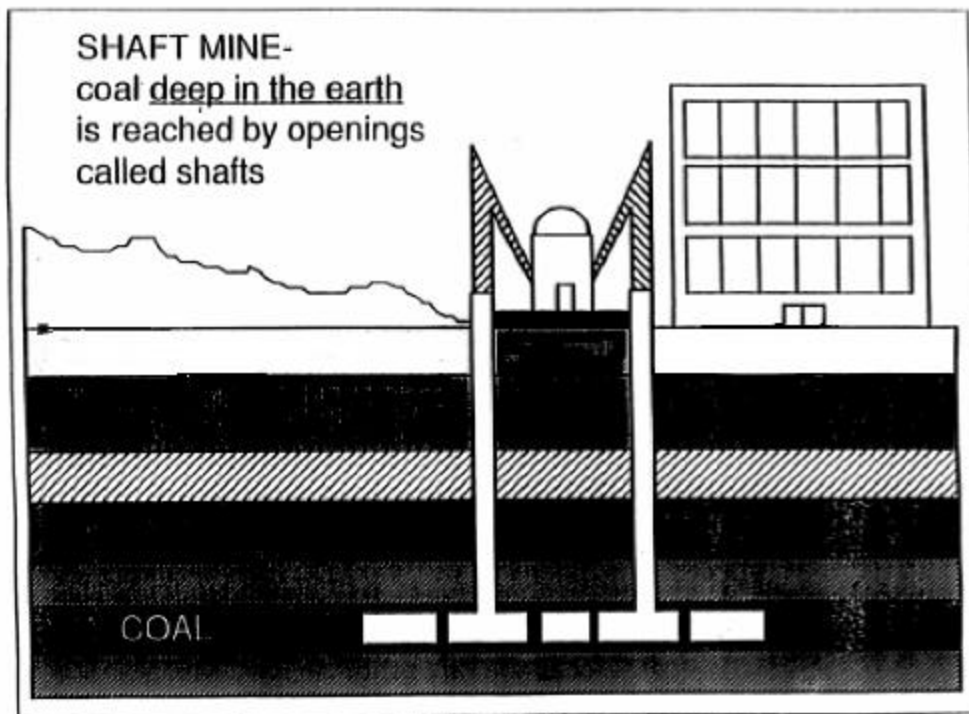


Figure 2

From Where Does Coal Come-Pri



SEDIMENTARY LAYERS



COAL MINING - UNDERGROUND

Provided by Pittsburgh Energy Technology Center

Return to [Primary Lesson Plans](#)