**Student Worksheet**

**Natural Gas in Arkansas WEB Quest Tasks and Assessment**

**Use the back of this sheet or a separate sheet to answer.**

**Task 1: What is Natural Gas?**

Using key words and phrases from the questions below, find information on the internet to complete the following questions:

1. What is natural gas?
2. What are the 4 primary gasses that make up natural gas?
3. Name four ways natural gas is used?

**Task 2: Why is Natural Gas Production Important to Arkansas?**

Using the following suggested key phrases and others selected by the student, explore the internet to complete the questions below:

* Benefit of natural gas
* Economic impact of oil and gas jobs in Arkansas
* Oil and gas jobs and the economy in Arkansas
* Average annual income for Arkansas workers
* Arkansas household income
* Arkansas severance tax revenue

Also refer to: *Revisiting the Economic Impact of the Natural Gas Activity in the Fayetteville Shale: 2008-2012* (<https://cber.uark.edu/files/Revisiting_the_Economic_Impact_of_the_Fayetteville_Shale.pdf>)

1. Why have the Fayetteville Shale activities and the oil and gas industry been beneficial to the economic growth of Arkansas?
2. According to the latest figures how many employees are working in oil and gas industry establishments in Arkansas? State the year of the statistics that were used for your answer?
3. What additional activities have been generated in the Fayetteville Shale development that improved the economic conditions in Arkansas
4. What was the increase in the production of natural gas in Fayetteville Shale counties between 2004 and 2011?
5. How much severance tax revenue did Arkansas collect from natural gas in the most recent year recorded? If natural gas production remains approximately the same, how much total severance tax can be expected for the next 5 years?

**Task 3: What is Shale and Why is it Important?**

Using key words and phrases selected by the student, explore the internet to find the following:

1. Define shale:
2. Explain in detail how sedimentary rocks are formed:
3. What is meant by the term **shale gas**?
4. The Fayetteville Shale is a deposit of sedimentary shale rock formation that stretches across Arkansas. Give a complete physical description of the formation:
* Location of the deposit
* Size in square miles
* Approximate depth
* Approximate thickness
* Counties included in the Fayetteville Shale Play

**Task 4: What is fracturing (fracking)?**

Using the key word “fracking,” locate a video and other resources to complete the following questions.

1. After watching an animated video of the “fracking “procedure, describe the steps from drilling to completion of a well.
2. What is in fracturing fluid?
3. What are some benefits of horizontal drilling and hydraulic fracturing?

**Assessment #1**:

After completing this web quest students will work with 4 to 5 other students to compose a question to ask a geologist to extend their knowledge. The group’s question must be printed and turned in as an assignment. Using the questions from each group, the class will compose one or two questions to be emailed to:

USGS Ask A Geologist (<https://answers.usgs.gov/>)

(This web address may change over time. You may use key phrase: USGS Ask A Geologist to locate the correct web site.)

Another option is to contact the **Arkansas Geological Survey** (<https://www.geology.arkansas.gov/> ) to request assistance in answering the questions. When students receive answers they will be shared with the class.

**Assessment #2:**

Students will complete a persuasive essay from the viewpoint of the natural gas industry explaining why Arkansas should continue drilling for natural gas using the current technologies.