

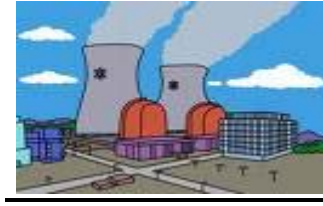
Name:

Date:

Period:

Nuclear Power Webquest

*A lot of potential energy stored
in a very little package (the nucleus of an atom)*



Directions: The forces of attraction which holds protons and neutrons together in the nucleus is the strongest force we know of...in fact it is called the “strong force”. This means that when the nuclei of atoms are altered (split apart or smashed together) tremendous amounts of energy can be released. You will be reading an article online at the **HowStuffWorks.com website** to answer the 8 questions below.

GO TO <http://science.howstuffworks.com/nuclear-power.htm>

Answer the questions while reading through the various sections of this article. You can do this by clicking NEXT after finishing each page or clicking on the hyperlinks at the bottom of each page that looks like this:

1. [Introduction to How Nuclear Power Works](#)
2. [Nuclear Fission](#)
3. [Inside a Nuclear Power Plant](#)
4. [Outside a Nuclear Power Plant](#)
5. [Subcriticality, Criticality and Supercriticality](#)
6. [Problems with Nuclear Power Plants](#)
7. [Lots More Information](#)

1. Why is U-235 (the Uranium isotope with a mass of 234 amu) a special element and what is it used for?
2. Describe nuclear fission and how the famous equation $E = mc^2$ relates to this process?
3. Sketch the diagram of a nuclear power plant and speculate as to the function of each of the labels A through H. Each part is not explicitly detailed in the article, so it is up to you to use the diagram to give your best explanation of what each of the parts from A to H do.

Name:

Date:

Period:

4. What is meant by the term **supercritical** and how does it relate to what is being attempted when making a nuclear bomb (quick, explosive effect) as opposed to a nuclear power plant (controlled steady production of energy)?
5. List 4 significant problems with nuclear power plants.

CLICK on the [nuclear bomb](#) hyperlink or **GO TO** <http://science.howstuffworks.com/nuclear-bomb.htm>

6. What is the difference between nuclear fission and nuclear fusion?
7. Describe how the gun-triggered fission bomb (aka “Little Boy” bomb) worked. How was it triggered to explode? Click on the “remove shell” and then “detonate” icon to see the animation for help with the explanation.
8. Describe the immediate effects of a nuclear bomb on the hypocenter (or ground zero) as well as long term health consequences.

The source of radioactive fuel is often uranium, which has its own controversies as well.

Use the websites listed below and any other resources to answer the following questions.

<http://en.wikipedia.org/wiki/Mining>

<http://www.powertechuranium.com/s/AboutUranium.asp>

<http://www.powertechuranium.com/s/Centennial.asp>

Name:

Date:

Period:

<http://www.powertechuranium.com/s/PublicHealth.asp>
www.nunnglow.com

9. Go to the Powertech USA website (second link given above) to learn about Uranium. Write three comments about what you learned.

10. Scan the Centennial Project for Powertech USA to determine where this Uranium mine is located using the third link above. Then go to the fourth link above to read Powertech's responses to Public Health and Environment questions. Read the questions regarding radiation exposure, tailings, open-pit mining, air quality and reclamation plans and give a response on whether you think Powertech is a credible source or not. Explain why.