Dougherty Valley HS Chemistry
Nuclear Chem Webquest

Worksheet #1

Name: **Period:** **Seat#:**

In this web quest, you will explore nuclear chemistry in real-world situations. You will learn about fusion and fission, types of radiation, its effects on humans, and how nuclear power is produced as well as its repercussions and disasters. ***Links checked 8/2/2018***

Introduction to Atomic Physics

https://drive.google.com/file/d/1VCHyj5Mbx92HBDEHjOIu1-vp-VJOX2CH/view?usp=sharing

1) What is the smallest particle of matter that maintains the properties of that element?	**2)** Sir Ernest Rutherford concluded what two things about atomic structure? Include some sketched pictures to help describe.	
3) Niels Bohr contributed what to atomic structure theory? Include some sketched pictures to help descrive		**4)** What is the unit of measure for the diameter of atoms?
5) What is the unit of measure from #4 equal to?	**6)** Make a chart showing the three basic subatomic particles, the charges on the particles, and who discovered each particle.	
7) The number of which subatomic particle determines the chemical element that it is?	**8)** The number and arrangement of which subatomic particle determines most of the atom's properties?	**9)** Protons and neutrons are composed of even smaller subatomic particles called
10) Define isotopes:	**11)** Fill in the blanks: Isotopes have the same _____ properties but very different _____ properties.	**12)** Most isotopes are stable but some are:

13) What is binding energy?	**14)** What does binding energy determine?	**15)** $E = mc^2$, explains the relationship between the binding energy and mass defect. It shows that a small amount of: can produce a large amount of:
16) Define radioactivity:	**17)** Name the three scientists that discovered and researched radioactivity:	**18)** List the three most common types of radioactive decay:
19) Define half-life:	**20)** List what is emitted during each decay type: - Alpha: - Beta: - Spontaneous fission:	

Nuclear Power https://drive.google.com/file/d/1VKNBUrpzXQM-hfVACCtiqY2Uxh0JuKV5/view?usp=sharing

21) Discuss the release of energy by fission.	What is meant by uranium enrichment?
22) Explain the role of control rods in a fission reaction.	**23)** What is critical mass?

Hydrogen Bomb
https://drive.google.com/file/d/1VKwhSKD5_cROLjroN6DZMcOVxe-Nje6I/view?usp=sharing

24) What nuclei are fused in the nuclear reaction of a hydrogen bomb?	**25)** What function does styrofoam perform in a hydrogen bomb?	**26)** Why is a fission bomb needed as part of an H-bomb?

Nuclear Weapons https://drive.google.com/file/d/1VRI9Fxm9RfjEGYyFoaTe4QfYCouNpj45/view?usp=sharing

27) Describe how an atom bomb works.	**28)** Describe how radioactive fallout is produced by the explosion of a bomb.
29) What are the health consequences of radioactive fallout particles?	**30)** Briefly portray a nuclear winter scenario

Go to the following website: List at least ten things that radiation can do to the human body.
https://drive.google.com/file/d/1VbiTrhsuTEUsNq4AeuSSMyQaAxBZyOjY/view?usp=sharing

1.	**2.**
3.	**4.**
5.	**6.**
7.	**8.**
9.	**10.**

Using what you learned during this webquest:
What are the 10 most interesting, important, relevant things you learned? We can all have different answers!

1.	**2.**
3.	**4.**
5.	**6.**
7.	**8.**
9.	**10.**