**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>

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

properties. | 1. Most isotopes are stable but some are:
 |
| 1. What is binding energy?
 | 1. What does binding energy determine?
 | 1. E = mc2, explains the relationship between the binding energy and mass defect. It shows that a small amount of: can produce a large amount of:
 |
| 1. Define radioactivity:
 | 1. Name the three scientists that discovered and researched radioactivity:
 | 1. List the three most common types of radioactive decay:
 |
| 1. Define half-life:
 | 1. 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>

|  |  |
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| 1. Discuss the release of energy by fission.
 | What is meant by uranium enrichment? |
| 1. Explain the role of control rods in a fission reaction.
 | 1. What is critical mass?
 |

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

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| --- | --- | --- |
| 1. What nuclei are fused in the nuclear reaction of a hydrogen bomb?
 | 1. What function does styrofoam perform in a hydrogen bomb?
 | 1. Why is a fission bomb needed as part of an H-bomb?
 |

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

|  |  |
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| 1. Describe how an atom bomb works.
 | 1. Describe how radioactive fallout is produced by the explosion of a bomb.
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| 1. What are the health consequences of radioactive fallout particles?
 | 1. 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>

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| **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!

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