**Unit 3 Web Quest Report** Per.\_\_\_\_\_\_\_

Group members: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Section 1**:

1. The scientists involved in the advancement of nuclear chemistry
2. Stable vs. unstable nuclei (compare and contrast)
3. Types of radiation emitted during nuclear reactions (explain each type and write an example reaction)
4. Nuclear fission vs. nuclear fusion (Compare and contrast these two processes)

**Section 2:**

1. What are the nuclear reactions involved in this use of nuclear chemistry?
2. What is the purpose of this use of nuclear chemistry in our world?
3. What are the benefits of this use of nuclear chemistry in our world?
4. What are the detriments of this use of nuclear chemistry in our world?

**Section 3: Answer questions in Parts 3a – 3h**

**3a:**

1. What are the commonly used units to measure radiation dosage?
2. What is considered a lethal dose of radiation?
3. What are some of the common effects of radiation exposure?
4. What specifically happened to people in Hiroshima and Nagasaki?
5. What happened to the people of Chernobyl?

**3b:**

1. What are the natural and manmade sources of radiation? And what is the percentage for each?
2. What is the general dose of radiation per year?
3. Look at the Doses from Medical Procedures chart (under Doses in Our Daily Lives). Compare the doses a patient receives from X-rays and from a CT scan to the yearly radiation dose.
4. Calculate the Personal Annual Radiation Dose for 2 of your group members.  List the name and the dose: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
5. How much does the NRC (Nuclear Regulatory Commission) allow you to be exposed to each year?

**3c:**

1. What are the sources of energy in California?
2. Why is nuclear energy “clean air energy”?
3. CO2 emissions contribute to global warming. Compare and contrast CO2 emissions produces by burning fossil fuels (goal and natural gas) to nuclear energy.
4. What is the USA global position in producing nuclear energy?
5. How much nuclear energy is now produced in the USA?
6. What is the projections on building new nuclear power plants?

**3d:**

1. How is nuclear medicine useful in diagnosing illnesses?
2. How is nuclear medicine useful in treating illnesses?

**3e:**

1. What is the major source of energy in a nuclear reactor?
2. Describe what happens in nuclear fission.
3. How does a nuclear plant work?
4. List 3 hazards of nuclear power.

**3f:**

1. What nuclei are fused in the nuclear reaction of a hydrogen bomb?
2. What function does Styrofoam perform in a hydrogen bomb?
3. Describe the reaction in a fusion bomb?

**3g:**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Alpha particles | Beta particles  | Gamma radiation  |
| Definition  |  |  |  |
| Charge |  |  |  |
| Symbol  |  |  |  |
| Penetrating power |  |  |  |
| Stopped by |  |  |  |
| Radioactive decay (explain the process, what is the end product) |  |  |  |
| Equation for radioactive decay (example):  |  |  |  |

**3h:**

Radioactivity:

Radiation:

Radioisotopes:

Nuclear Force:

Natural Radioactive Decay:

Artificial Transmutation:

Alpha Particle:

Beta Particle:

Gamma Radiation:

Fusion:

Fission:

Half time:

Fuel rods:

Uranium-235:

Enriched uranium:

Control rods:

Neutron:

**Section 4:**

**Nuclear power comparison worksheet**

|  |  |
| --- | --- |
| **Facts FOR using nuclear power**  | **Facts AGAINST using nuclear power** |
|  |  |

Based on the data above, our group agrees that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Section 5:** Write a persuasive argument