

Name: _____ Period: _____ Date: _____

Applications of Nuclear Chemistry Activity

Station 1: Chemical vs. Nuclear Reactions

Directions: Pick up the Station 1 Cards and figure out which cards apply to chemical reactions and which apply to nuclear reactions. When finished **ask for a teacher initial** then copy it below.

Teacher initial: _____

Chemical Reactions	Nuclear Reactions

Station 2: History of Nuclear Chemistry

Grab the materials for Station 2 from the front of the room. First you are going to watch a short video about Marie Curie. Use the QR code below:



Below write a short summary of all of Marie Curie's accomplishments. Be sure to include the elements she discovered, who she worked with, what she was awarded, the implications of her discoveries and how she died.

Read about the first nuclear power plant (Obninsk) and answer the following questions:

1. When did it open? _____
2. What city was it built in? _____
3. What is the city sometimes referred to? _____
4. What does the city also house? _____
5. According to the article, has nuclear power been embraced? Explain. _____

Station 3: Nuclear Power Plants

For this section, you will need to grab a red textbook and turn to page 718. Read the section titled "Nuclear Power Plants" and answer the following questions.

1. For each of the following parts, describe what it does and if applicable what is it made of?
 - a. Shielding
 - b. Fuel
 - c. Control Rods
 - d. Moderator
 - e. Coolant
2. Describe in a couple sentences exactly how electricity is generated in a nuclear power plant.
3. Below, draw a simple picture of a nuclear power plant and label its parts.

Use the QR code below to read about our nearest Nuclear Power Plant. Note: this is a Wikipedia site so there may be some inaccurate information.



What is its name? _____

What town is it in? _____

Learn a little more about this nuclear power plant. Look up and write down five facts below.

Use Google Maps or something similar to determine exactly how many miles Green Hope is from this Power Plant. _____

Read the section titled "Surrounding Population" from the website above. Are we in any danger?

Station 4: Nuclear Power Plant Accidents

Grab the article from the Station 4 folder and read about Fukushima Daiichi, Chernobyl, and Three Mile Island. Summarize, **in your own words**, when they happened, the toll they had, and how they occurred.

You may need to search for more information regarding the recent Fukushima accident. This website may help:

Fukushima



Chernobyl

Three Mile Island

Station 5: The many uses of Nuclear Chemistry

Grab the station 5 baggie. Match all words with their descriptions or definitions. **Look up the words online or in the textbook for help if needed.** Retrieve a teacher initial when you think you've matched everything correctly. When finished, copy all definitions of the words below.

Teacher initial _____

Word	Definition
Roentgen	
rem	
rad	
film badge	
Geiger-Muller counter	
scintillation counter	
radioactive dating	
Barium	
Cobalt-60	
CAT scans	
PET scans	
Nuclear agriculture	
Radon-222	
Americium-241	

Station 6: Yearly Radiation Exposure

Use the QR code below to determine how much radiation you are exposed to each year.



How much radiation are you exposed to? _____

List at least 3 things that expose you to radiation (with the mrem values) that surprised you.

What does your value mean? What is the normal exposure value? You shouldn't be concerned until the mrem hits about what value? You may need to do some extra research to determine these answers.

Station 7: Biological Effects

Go pick up your materials for this section. Read the introduction and the section titled "What effect can ionizing radiation have on chemical bonds"

Summarize this section with a few sentences in your own words.

What is ionizing radiation? Describe and give examples (you will need to search online).

What is non-ionizing radiation? Describe and give examples (you will need to search online).