

## Summer 2023

**Welcome future APES students!** This is an advanced science course that combines the disciplines of biology, chemistry, geology, and physics to investigate global environmental issues. We will discover how the Earth's systems function together and how humans have affected our planet. We will also examine our personal consumption habits and learn ways to be responsible global citizens in the face of serious environmental issues.

- **Read the directions for each section carefully! Follow the rubric!!**
- All work is to be completed on your own. You may not work with other students to complete this assignment. **Work is due the first day of school!!**
- **The quizzes on chemistry and environmental disasters will not be the first day of school but will be given during the first week of school.**
- **THIS WORK IS REQUIRED, if you come to school without it complete, you will have to drop class.**
- **No excuses will be accepted if you are not finished.**

### Section 1: Introduction

1. Email me at [angelaward@johnncarroll.org](mailto:angelaward@johnncarroll.org) (note that I'm the only JC teacher that my email address is my first and last name, I'm special ;) So if you send it to award...I will not get your email. To receive full credit, email should be received by **July 1<sup>st</sup>**.

Please let me know the following information in your email:

- Your name, grade
- That you got the summer assignment
- Sciences you have taken in High School
- Tell me a little bit about yourself
- Do you know what climate change is? Do you think climate change is real? Be honest. Tell me why you feel this way.

### Section 2: Chemistry Review

Chemistry is a big part of environmental science.

**This must be handwritten. You can make it as a chart or list.**

1. For each of the following, write out the chemical name that goes with the symbol:

CO <sub>2</sub>	CO	C <sub>6</sub> H <sub>12</sub> O <sub>6</sub>	CH <sub>4</sub>	H <sub>2</sub>
N <sub>2</sub>	NO <sub>2</sub>	NO <sub>3</sub>	NH <sub>3</sub>	NH <sub>4</sub>
O <sub>2</sub>	O <sub>3</sub>	P	PO <sub>4</sub> <sup>3-</sup>	S
SO <sub>2</sub>	SO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaCl	Pb
U	Rn	Hg	Cl	H <sub>2</sub> O

2. Write at least a paragraph that explains the following:
  - a. What is the greenhouse effect? (should be in your own words)
  - b. How are greenhouse gases changing the climate?
  - c. Greenhouse gases can be good and bad for the planet. Explain.
  - d. What are 6 examples of greenhouse gases? (give their name and chemical formula)

### Section 3: Current Events

Over the course of the summer, find **2 recent** articles related to environmental science.

**All articles should be current (October 2022 to present)** and taken from a reliable source. The sources may be scientific publications, popular magazines, newspapers etc. Try the NY times (especially Tuesday), Washington Post, National Geographic, Discover Magazine, Natural History Magazine, Treehugger.com, etc.

The 2 articles you pick should relate to a different topic chosen from the following list:

Environmental Law	Ecosystems	Climate	Evolution	Preserving our biodiversity
Water pollution	Population growth	Cities and waste	Geology	Renewable Energy
Nonrenewable energy	Food/agriculture	Air pollution	Human Health	Forest or Rangeland

#### **Article Analysis Directions:**

Include all the following components and clearly identify each component with headings. Each analysis should be either **typed or very neatly written in blue or black ink**. Each article should be on its own paper.

- Title of the Article
- Summary: **brief** summary that tells me what the article is about.
- Analysis:
  - a. Points of view – does the article have more than one side? If so what are they?
  - b. Bias – Is this article biased in any way? In your opinion, does the author give a positive, negative, or neutral view of the environmental science topic?
  - c. Your perspective: State your perspective on this news article based on your personal knowledge of the topic and your reading of the article.
  - d. Effect on you: How does this topic relate to you or your affect you?
- Attach the article – a physical copy of the article must be included.



#### Section 4: Environmental Disasters

As you begin your journey into APES, it is important for you to understand the significance various environmental disasters have had on our world. After completing this assignment, you will begin to see the impact the human population has had on the Earth. These are considered some of the worst environmental disasters.

You can organize this information any way you would like. **MUST be handwritten in blue or black ink.** No typed papers will be accepted. Be as detailed as possible.

Chernobyl	Kuwaiti Oil Fires	Exxon Valdez	Baia Mare Cyanide Spill	Minamata Disease
Bhopal	Love Canal	BP Oil Spill	Seveso Dioxin Cloud	Three Mile Island

- A. For the TEN environmental disasters answer the following questions for each:
1. When did disaster occur?
  2. Where did the disaster occur?
  3. What happened?
  4. What were the short term and long-term effects of the disaster?
- B. Now pick two more disasters of your choice and answer the 4 questions for each.



## Section 5: APES Selfies

The APES course is divided into nine sections. You need to take 9 pictures of yourself this summer in settings that relate to the nine sections of the course outline. **You must be in each picture.** It should be a **REAL SELFIE, not a picture that you photo shopped yourself into.** After you have gathered your 9 selfies, **you need to create a Power Point or Google Slide presentation containing your pictures.** It should be 10 slides long (introduction slide and one slide for each section) The slide should contain the picture and a brief description about picture...where you took it, what it is etc.

These are a few suggestions just to get you started thinking about this. The possibilities are endless be creative.

### 1. The Living World: Ecosystem

Take a photo of yourself in a local or exotic ecosystem/biome. Identify the ecosystem/biome.

### 2. The Living World: Biodiversity

Find a location where you can capture three different animals or plants in one picture.

### 3. Population

Harford County sadly has many examples of population growth. Another example could be animal or plant populations.

### 4. Earth Systems and Resources

We live in the Chesapeake Watershed. Maybe you don't know what a watershed is, but you will learn. Take a picture of you next to the Chesapeake Bay. (be sure to document location)

### 5. Land and Water Use

Take a picture of yourself helping on a farm or garden, visiting a state forest or park, taking public transportation, fishing, etc

### 6. Energy Resources and Consumption

Lots of possibilities here: solar panel installation, wind turbines, power plants, substations, alternative fueled vehicles

### 7. Atmospheric Pollution

Take a picture that shows smog or pollutants entering the atmosphere.

### 8. Aquatic and Terrestrial Pollution

A picture that shows land or water pollution. Sadly, this won't be hard.

### 9. Global Change

Consider a photo near something that is changing as a result of climate change. Some ideas: sea level rise, deforestation, erosion or near a sign indicating endangered species habitat. A picture that shows how our planet is in trouble.



Name \_\_\_\_\_

**Section 1: Introduction**                      **Score \_\_\_\_\_/10**

- I have emailed Mrs. Ward.
- Email included: Statement that you received the summer assignment
- Email included: sciences taken
- Email included: an introduction about yourself
- Email included: your opinion about climate change
- Email received by July 1<sup>st</sup>.**

**Section 2: Chemistry Review**                      **Score \_\_\_\_\_/15**

- I have identified all the chemical compounds
- The assignment was done by hand, not typed
- I have written at least one paragraph about the greenhouse effect & am ready to explain it
- I have studied the chemical compounds and am ready for a quiz

**Section 3: Current Events**                      **Score \_\_\_\_\_/30**

- I have completed two article current events
- The article is recent, written over the last school year
- I have attached a paper copy of my articles
- I have put effort into each analysis

**Section 4: Environmental Disasters**                      **Score \_\_\_\_\_/25**

- I have researched and recorded information for all the disasters listed
- I picked two additional disasters of my choice and researched and recorded information about them
- The assignment was done by hand, not typed
- I have studied the disasters and am ready for a quiz

**Section 5: APES Selfies**                      **Score \_\_\_\_\_/30**

- I have taken 9 selfies related to each section of the course
- I am in each picture, not photoshopped in
- I created a power point presentation that is 10 slides long, each slide has one picture, and a description of what selfie is showing

**All assignments are due the first day of class. There is not a good reason why they aren't finished.  
Have them ready.**