Summer Learning 2017

Department: Science

Course Title: DLI - Advanced Chemical Applications

Teacher: Mr. Priedemann

Overview: During our first semester of DLI-Advanced Chemical Applications we will be conducting authentic research on various pollutants in and around our campus. Each team of students will be exploring and researching a pollutant that is particularly interesting to them. To help you begin to think about what area of environmental chemistry would be interesting to you, please take some time this summer to begin to study environmental pollutants and how they impact the world around us.

Learning Intentions:

- Students will be introduced to environmental pollutants that exist in our community.
- Students will begin to draw connections between environmental pollutants and human activities.
- Students will differentiate between natural and artificial sources of environmental pollutants.
- Students will summarize environmental chemistry research from news sources or popular publications (not necessarily scientific research articles)
- Students will analyze news reports of legislation aimed at stemming the impact of environmental pollutants
- Students will familiarize themselves with the Environmental Protection Agency (EPA) website, the CT Department of Energy and Environmental Protection (DEEP) website and the NY Department of Environmental Conservation (DEC) website while looking for rules on environmental pollutants.

Task:

Pick two (2) of the following topics and answer the questions below for each selected topic.

Topics:

- Phosphates and Harmful Algae Blooms
- Ozone and Urban life/Car Emissions
- CFCs and the Ozone Hole
- Organophosphates, Pesticides and Water Pollution
- Nitrates and Water Pollution
- Carbon Dioxide and Ocean Acidification
- Sulfur Dioxide and Acid Rain

- Microbeads, Plastics, and Ocean Pollution
- Mercury in Seafood
- Carbon Monoxide and Atmospheric Equilibrium
- Soil Acidification and Modern Agricultural Production
- Water Salinity and Winter Road Salting
- Heavy Metal Contamination of Soil and Water
- Tarballs and the Gulf of Mexico

Questions:

1. Describe the pollutant you selected in as much detail as possible.
    a. This should include a description of its structure for molecules or atomic structure for elements.
2. Describe where this pollutant comes from. This is often referred to as the point source.
    a. There could be a variety of sources for your selected pollutant.
3. Does your pollutant occur naturally or is it only a product of human activity? Explain.
    a. What are the natural sources? Artificial sources?
4. Describe the impact that your pollutant has on the environment.
5. What solutions are researchers working on to resolve the problem?
6. What has been done legislatively to minimize the impact of this pollutant on the environment?

Success Criteria:

- All of your responses should be written in **full sentences** with proper grammar and punctuation.
- You should include a list of any resources you used to develop your response. This should not just be a list of hyperlinks. Provide a title and authoring source with your hyperlink.
    - We will be assembling presentations early in the fall.
- Your responses can be bulleted or in an essay format.
- I anticipate that a full and complete project will be between 3-5 pages. This does not include your bibliography.

This assignment is due the first day of school. If you have any questions or concerns about the project, feel free to reach out by email, christopher.priedemann@woosterschool.org. We will be hitting the ground running so be prepared to talk about pollutants the first week of school.