

## BIOGEOCHEMICAL CYCLES PROJECT

### ASSIGNMENT:

Nutrients are cycled through ecosystems. The following activity will help you understand the process as well as the importance of each biogeochemical cycle. Read the information concerning the five biogeochemical cycles; water, carbon, phosphorus, sulfur, and nitrogen in your text. You may use the links below or other websites you find during your research to complete the assignment.

**Part 1: POSTER OR FLIP CHART:** After reading about the cycles you will create one poster or flip chart including all 5 cycles.

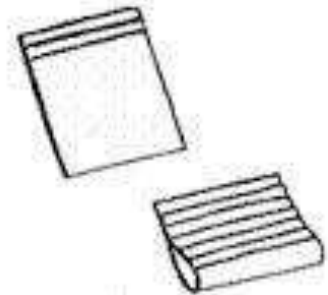
**The poster should be completed as described below:**

1. All 5 cycles must be on the same poster
2. Each cycle process must be completed in a **different color**. Don't forget to include a key!
3. Use → arrows to show the pathway of movement of the nutrients in each cycle.
4. Where appropriate include chemical compounds or reactions involved in the cycle
5. Identify inorganic and organic **reservoirs** for the element (where is this element stored throughout the cycle.)
6. In addition to the above content, posters should be visually pleasing including color, illustrations, and any other items you would like to use. For example, you may want to use cotton balls to represent clouds. You can color them gray to show the pollutants released when fossil fuels (carbon) are burned.

**The flip chart should be completed as described below:**

Biogeochemical Cycles Flipchart

1. Take three different pieces of construction paper
2. Stack them and then spread them out equally
3. Fold the stack over as shown, and staple the bottom
4. Label each of the "tabs" as follows:
  - a. "Biogeochemical Cycles"
  - b. "Hydrological Cycle"
  - c. "Carbon-Oxygen Cycle"
  - d. "Nitrogen Cycle"
  - e. "Phosphorus Cycle"



f. **“Sulfur Cycle”**

5. **Underneath each tab, draw the cycle on one side, and describe the process on the other. Include the following for each cycle:**
- g. **Descriptions of each major process in the cycle**
  - h. **Main reservoirs for each nutrient**
  - i. **Importance of the chemical to natural systems**
  - j. **Human impacts on the cycle**

**Part 2: INDIVIDUAL RESEARCH:**

On a separate sheet of paper, address the impact of human intervention on each cycle. This should be at least 3 paragraphs long.

This **MUST** be typed and **all** references used for research should be included.

**WEBSITES:**

- 1. Water cycle
  - a. [http://www.iptv.org/exploremore/water/in\\_depth/watercycle.cfm](http://www.iptv.org/exploremore/water/in_depth/watercycle.cfm)
- 2. Phosphorous cycle
  - a. <http://www.lenntech.com/phosphorus-cycle.htm>
- 3. Sulfur cycle
  - a. <http://homepages.nyu.edu/~pet205/sulfur.html>
- 4. Nitrogen cycle
  - a. <http://users.rcn.com/jkimball.ma.ultranet/BiologyPages/N/NitrogenCycle.html>
- 5. Carbon cycle
  - a. <http://www.physicalgeography.net/fundamentals/9r.html>

**Part 3: Peer Review**

You complete a peer review in class on **Friday, October 23, 2015**. Each person is responsible for participating in the creation of the final poster. **The peer review is part your grade**. See rubric for specifics on grading of both the poster and the peer review.

### Biogeochemical Cycle Scoring Rubric

Name: \_\_\_\_\_

Group Members: \_\_\_\_\_

**General:**

		S*						T**	
1.	Student uses class time wisely	5	4	3	2	1	0	_____	_____
2.	Student is completely prepared	5	4	3	2	1	0	_____	_____
3.	Student completes all tasks assigned by group	5	4	3	2	1	0	_____	_____
<b>TOTAL</b>									

**Accuracy/Thoroughness of information:**

		S*						T**	
1.	All stages of each cycle are apparent	10	8	6	4	2	0	_____	_____
2.	Arrows show movement of nutrients	5	4	3	2	1	0	_____	_____
3.	Compounds/reactions are identified	5	4	3	2	1	0	_____	_____
4.	Inorganic and organic reservoirs are identified	5	4	3	2	1	0	_____	_____
5.	Impact of human intervention on each cycle	10	8	6	4	2	0	_____	_____
6.	References are included	5	4	3	2	1	0	_____	_____
7.	Additional information is typed as instructed	5	4	3	2	1	0	_____	_____
<b>TOTAL</b>									

**Poster Creativity/ Effort Score:**

		S*						T**	
1.	Exceptional effort is evident	5	4	3	2	1	0	_____	_____
2.	Cycles are color coded and easily identifiable	5	4	3	2	1	0	_____	_____
3.	Illustrations are included that add to each cycle	5	4	3	2	1	0	_____	_____
4.	Additional materials are used that add to each cycle	5	4	3	2	1	0	_____	_____
<b>TOTAL</b>									

**Student Peer Review:**

		S*						T**	
1.	Student accurately complete their assigned tasks on time.			3	2	1	0	_____	_____
2.	Student contributed quality work			3	2	1	0	_____	_____
3.	Student contributed material useful to their poster			3	2	1	0	_____	_____
4.	Student listens intently to other group members			3	2	1	0	_____	_____
<b>TOTAL</b>									

STUDENT TOTAL*	TEACHER TOTAL**

**ADDITIONAL COMMENTS:**