**BIOGEOCHEMICAL CYCLES, pp. 65 – 74**

1. ***Hydrologic Cycle***

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| **Name of Step** | **What process makes this happen?** | **Why is this step important?** |
| Evaporation | Solar heating of oceans, lakes, soils | Water enters atmosphere to be redistributed |
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Explain how the hydrologic cycle works:

1. ***Carbon Cycle***

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| **Name of Step w/ description of change** | **What organism/process does it?** | **Why is this step important?** |
| Photosynthesis (CO2🡪C6H12O6) | Autotrophs (plants) (producers) | Converts abiotic CO2 to biomass (base of food chain) |
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Explain how the carbon cycle works:

1. ***Nitrogen Cycle***

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| **Name of Step w/ chemical change** | **What organism/process does it?** | **Why is this step important?** |
| Nitrogen Fixation (N2🡪NH3 or NO3) | N-fixing bacteria (ie in legume roots) OR fires/lightning OR fertilizer manufacturing | Puts N in to the base of the food chain; fertilizer manufacture |
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Explain how the nitrogen cycle works:

1. ***Phosphorus Cycle***

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| **Name of Step w/ description of change** | **What process/organism does it?** | **Why is this step important?** |
| Weathering of rock🡪 Phosphate PO4 | Weathering (by rain, wind, ice, organisms) | Releases P from rocks in to reactive form usable by organisms |
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Explain how the phosphorus cycle works:

1. How does the water cycle help facilitate the other cycles?
   1. What human activities cause an impact on the hydrologic cycle?
   2. Describe the causes, effects and possible solutions of these impacts.
2. Explain the difference between the “fast” and “slow” parts of the carbon cycle.

Fast: Slow:

1. Which natural (nonanthropogenic) processes normally return buried carbon to the atmosphere to balance out the carbon that is buried through sedimentation?
   1. Which 2 macronutrients most frequently serve as the limiting nutrient for plant growth in an ecosystem?
   2. Is it different for terrestrial vs. aquatic ecosystems?
2. Describe the results of a sudden influx of excess nitrogen or phosphorus in to an ecosystem.

N –

P –

1. When investigating environmental systems, why do scientists often select watersheds as an area in which to study ecosystems and nutrient/energy cycling?

**TERMS TO KNOW**

|  |  |  |  |
| --- | --- | --- | --- |
| **TERM** | **Description** | **Illustration** | **Example** |
| Biosphere |  |  |  |
| Biogeochemical Cycles |  |  |  |
| Hydrologic Cycle |  |  |  |
| Transpiration |  |  |  |
| Evapotranspiration |  |  |  |
| Runoff |  |  |  |
| Macronutrients |  |  |  |
| Limiting Nutrient |  |  |  |
| Nitrogen Fixation |  |  |  |
| Leaching |  |  |  |
| Disturbance |  |  |  |
| Watershed |  |  |  |
| Deforestation of Haiti |  |  |  |
| Rhizobium |  |  |  |
| Mycorrrhizae |  |  |  |