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|  | **How Big is a Petagram??** | **Magnitude of Human Presence** | **Turnover Rate & Residence Time** |
| Purpose | To help conceptualize the 'size' of a petagram of carbon. | To calculate the impact of human presence (not actions) on the global carbon cycle. | To understand turnover rate and residence time, in the context of the global carbon cycle. |
| Overview | Students assume that they have a 'brick of carbon', which is the same dimensions and weight of a standard building brick. Students then calculate the volume of 'carbon bricks' it would take to equal 1 Petagram of carbon. | Students use calculations to estimate the amount of carbon stored in and released by the global human population. Students make comparisons to storage and release by other carbon cycle components. | Students discuss as a class the concepts of turnover rate and residence time using a simplified example. Students use the *Global Carbon Cycle Diagram* to calculate turnover rate and residence time for each pool. |
| Time | 15 min (teacher directed)  30 min (student directed) | 20 min (teacher directed)  60 min (student directed) | 30 min |
| File Type | Spreadsheet (.xls) | Spreadsheet (.xls) | Text document (.pdf) |

Global Carbon Cycle Mini-Activities