**How Does Magma’s Composition Affect Volcanic Eruptions?**

**I. Introduction**

Volcanoes are powerful displays of Earth in action. Scientists have determined that three forces within Earth can create a volcano. Volcanoes can occur where two of Earth's plates converge, or rub together. Volcanoes can also occur where two plates diverge, or move apart. Hot spots, areas in Earth’s mantle that are hotter than neighboring areas, are also the sites of volcanoes.

There are three different forms of volcanoes. The form of a volcano depends on the composition of its magma and the amount of water vapor and other trapped gases. These two things control the force of a volcano's eruption.

Shield volcanoes have sides with gentle slopes. They are made of basaltic lava. Cinder cone volcanoes have steep sides. They are made of tephra, lava cooled into different size pieces. Composite volcanoes have steep sides and are made of silica-rich lava and tephra. Their eruptive forces vary.

In this Virtual Lab you will explore some volcanoes in the United States to learn about their composition and their eruptive force.

**II. Procedure**

1. Start the activity by going to the following website :

<http://www.glencoe.com/sites/common_assets/science/virtual_labs/ES10/ES10.html> .

2. Click the Video button. Watch the video about volcanoes.

3. Click A, B, or C on the map of the United States to select a volcano you want to investigate.

4. Click the Form Reference button to review the three different forms of volcanoes.

5. Click the arrow below Volcano Form to select the form of the volcano shown. Record the

form you selected in the Table.

6. Click the arrow below Silica Content to select the content of silica in the magma. Record

your selection in the Table.

7. Click the arrow below Water Content to select the content of water in the magma. Record

your selection in the Table. If you have selected the correct volcano form and silica and

water content of the magma, an arrow displays below Eruptive Force. If no arrow displays,

review your choices and adjust your selections.

8. Click the arrow below Eruptive Force to select the force of the volcanic eruption. Record

your selection in the Table.

9. Click the Erupt button. If you have selected the correct Eruptive Force, watch the volcano

erupt. If no eruption occurs, adjust your eruptive force selection.

10. Click the Map button to return to the main screen and select another volcano to explore.

**III. Data**

1. Record your data in the Table below.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Volcano** | **Types Of**  **Volcanic**  **Occurrences** | **Volcano**  **Forms** | **Silica**  **Contents** | **Water**  **Contents** | **Eruptive**  **Force** |
| A |  |  |  |  |  |
| B |  |  |  |  |  |
| C |  |  |  |  |  |

**IV. Analysis & Conclusions**

**1. How do you think the location of a volcano affects the magma composition?**

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**2. Which magma composition causes the most violent volcanic eruptions? Why?**

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**3. Describe how magma composition and the resulting eruption affect the form of a volcano.**

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