

Yellowstone Caldera Reading Comprehension

Name _____

A caldera is formed during an explosive volcanic eruption. During an explosive volcanic eruption, the magma within the magma chamber is violently ejected, leaving an empty space in the Earth's crust where it used to be. The empty space can no longer support the surrounding structure, which causes the volcano to collapse in on itself. What remains is a circular depression in the ground. This process is how the Yellowstone Caldera was formed which is approximately 34 miles by 45 miles in size.

The Yellowstone Caldera in Yellowstone National Park in Wyoming is the result of three supervolcanic eruptions 640,000 years ago, 1.3 million years ago, and 2.1 million years ago. Supervolcanoes are volcanoes that have erupted more than 240 cubic miles of material at some point in their lives. The largest eruption at Yellowstone emitted 588 cubic miles of material when it erupted 2.1 million years ago. When Yellowstone erupts again it could emit enough material to cover half of the United States if not more. Fortunately this is not expected to happen any time soon if at all.

Supervolcanoes can change the earth's climate and environment, and are extremely catastrophic events. They are so catastrophic in fact that they can put the earth into a "nuclear winter" and drop global temperatures. The supervolcanoes at Yellowstone are currently forming on top of a hotspot. A hotspot is a location in the earth's crust where magma is rising up through the crust and coming out at the earth's surface. A hotspot will remain in place while the crust moves on top of it.

1. In the formation of a caldera, why does the volcano collapse in on itself?

- a. Because of the extremely hot temperatures
- b. Because of the power of the eruption
- c. Because of the empty space left by the magma
- d. Because of the hotspot under the surface

2. Which of the following IS NOT explained?

- a. What is a supervolcano?
- b. What is a nuclear winter?
- c. How many eruptions formed the Yellowstone Caldera?
- d. What are effects of supervolcanoes?

3. Supervolcanoes are determined by...

- a. age.
- b. the frequency of eruption.
- c. the amount of material in the eruption.
- d. the amount of magma ejected.

4. When was the largest eruption at Yellowstone?

- a. 2.1 million years ago
- b. 1.3 million years ago
- c. 640,000 years ago
- d. The passage doesn't say

5. Which is NOT true about hotspots?

- a. Supervolcanoes can grow over hotspots
- b. If the crust moves over a hotspot it will disintegrate
- c. A hotspot is located in the Earth's crust
- d. Magma rises up through a hotspot

6. What does "emit" mean in the following sentence?

When Yellowstone erupts again it could emit enough material to cover half of the United States if not more.

- a. occur
- b. release
- c. prevent
- d. cause

7. What does the author seem relieved about?

- a. That a modern-day supervolcanic eruption will not likely result in a nuclear winter
- b. That the last supervolcanic eruption at Yellowstone occurred 640,000 years ago
- c. That the supervolcanoes of Yellowstone are still forming
- d. That a supervolcanic eruption is unlikely to occur anytime soon