Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Class\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Deadliest Volcanoes: PBS Documentary Questions**

1. There are more than \_\_\_\_\_\_\_\_\_\_ active volcanoes around the globe.

2. What exactly triggers these eruptions? The answer lies several miles below the surface in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

3. Explain what causes a volcanic eruption. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. Iceland April 2010: A volcano erupted and threw large amounts of ash into the air, all across \_\_\_\_\_\_\_\_\_\_\_\_\_.

5. If magma moves into a volcano, it will push the ground \_\_\_\_\_\_\_\_, which the GPS sensors will be able to pick up.

6. It starts out as a beautiful, harmless event; but over the next 3 weeks that changes. It erupts more magma that mixes with \_\_\_\_\_\_\_\_ on top of the volcano, creating huge clouds of ash. Video captures \_\_\_\_\_\_\_\_\_\_\_\_\_\_ discharging from inside the cloud. The cloud rises \_\_\_\_\_\_\_\_\_\_\_ feet into the sky.

7. This isolated spot in the North Atlantic causes the worst airline disruption since \_\_\_\_\_\_\_\_\_. The total cost is over \_\_\_\_\_\_\_\_\_\_.

8. Yellowstone National Park, Wyoming: Yellowstone is a \_\_\_\_\_\_\_\_\_\_ volcano.

9. Most of the world’s volcanoes lie on the edges or between these plates. The most active edges are the ones surrounding the Pacific Ocean. This is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

10. How do scientists figure out when a volcanic eruption will occur? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11. Seismic waves travel faster through \_\_\_\_\_\_\_, solid rock and slower through \_\_\_\_\_\_\_, molten rock.

12. What would happen if Yellowstone had a cataclysmic eruption? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

13. People who are most at risk for volcanoes live in Naples, \_\_\_\_\_\_\_\_\_\_\_\_. It lies at the foot of the most famous volcano on Earth: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. It has erupted over \_\_\_\_\_ times in the last \_\_\_\_\_\_\_\_\_\_ years.

14. What do you think would happen if Vesuvius erupted today? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

15. Stromboli, Italy: This island is one big volcano rising from the sea. It’s erupting as it’s done every \_\_\_\_\_\_\_\_ for at least \_\_\_\_\_\_\_\_ years.

16. The big, deadly explosions are caused by \_\_\_\_\_\_\_\_\_\_\_\_, rich in CO2 that bubbles out, deeper down at much higher pressure. When CO2 starts appearing, a \_\_\_\_\_\_\_\_\_\_\_\_\_ event is on its way.

17. Washington State, Mt. Rainier: It is a potential killer. It is part of the same range as Mount \_\_\_\_\_\_\_\_\_\_\_\_\_\_.

18. Mt. Rainier has more ice and snow than any other mountain in the lower 48. If ice comes into contact with **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, it rapidly turns into a torrent of mud.

19. How do scientists use water to detect a volcanic eruption? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

20. Scientists can not only detect when but how **\_\_\_\_\_\_\_\_** the eruption will be. Some could devastate the whole **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.

After the video:

21. Three things I learned that I did not know before watching the video:

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

22. The two volcanoes mentioned in this video that are located in the United States are:

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

23. Discuss two ways scientists use technology to detect when a volcano will erupt.

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

24. Lahar is the mudflow or debris that flows downhill from a volcano. Explain how Lahar can be deadly and what scientists can do to warn us about it ahead of time. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

25. Why do you think people live close to volcanoes when they have the potential to be deadly? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Class\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Deadliest Volcanoes: PBS Documentary Questions (KEY)

1. There are more than **1,500** active volcanoes

2. What exactly triggers these eruptions? The answer lies several miles below the surface in the **magma chamber**

3. PAUSE AT 4:50 so they can answer number 3.

Explain what causes a volcanic eruption. **Magma contains gases at very high pressures. It rises in the chamber and pressure builds. When pressure gets too great, magma pushes through the rock and explodes to the surface, causing the eruption.**

4. Iceland April 2010: A volcano erupted and threw large amounts of ash into the air, all across **Europe.**

5. If magma moves into a volcano, it will push the ground **outwards** which the GPS sensors will be able to pick up.

6. It starts out as a beautiful, harmless event; but over the next 3 weeks that changes. It erupts more magma that mixes with **ice** on top of the volcano, creating huge clouds of ash. Video captures  **lightning** discharging from inside the cloud. The cloud rises **30,000** feet into the sky.

7. This isolated spot in the North Atlantic causes the worst airline disruption since **9/11.** The total cost is over **$2 billion.**

8. Yellowstone National Park, Wyoming: Yellowstone is a **super** volcano.

9. Most of the world’s volcanoes lie on the edges or between these plates. The most active edges are the ones surrounding the Pacific Ocean. This is the **Ring of Fire.**

10. PAUSE AT 16:10 and let them answer the question.

How do scientists figure out when a volcanic eruption will occur? **Scientists use a seismometers and seismographs to read vibrations that occur beneath the Earth. These vibrations occur when magma cracks rocks when it is moving toward the surface. Several days later, the volcano will erupt.**

11. Seismic waves travel faster through **cold,** solid rock and slower through **hot,** molten rock.

12. 18:45- 20:28 PAUSE to answer number 12.

What would happen if Yellowstone had a cataclysmic eruption?

**Massive volumes of material would erupt and go on for months. It would destroy the surface rocks in its path. Most of Western US would be buried in thick ash deposits, capable of collapsing buildings and suffocating people. Sunlight would block, temperatures would decrease, people would starve and die. It has the force of 1,000 Hiroshima bombs. We just don’t know when it will erupt.**

13. People who are most at risk for volcanoes live in Naples, **Italy**. It lies at the foot of the most famous volcano on Earth: **Vesuvius.** It has erupted over **25** times in the last **2,000** years.

14. What do you think would happen if Vesuvius erupted today? (says it around 32:00)

**It would wipe out the city of Naples, Italy. It would endanger millions of people, even killing them.**

15. Stromboli, Italy: This island is one big volcano rising from the sea. It’s erupting as it’s done every **day** for at least **2,000** years.

16. The big, deadly explosions are caused by **magma**, rich in CO2 that bubbles out, deeper down at much higher pressure. When CO2 starts appearing, a **dangerous** event is on its way.

17. Washington State, Mt. Rainier: It is a potential killer. It is part of the same range as Mount **St. Helens**

18. Mt. Rainier has more ice and snow than any other mountain in the lower 48. If ice comes into contact with **hot lava**, it rapidly turns into a torrent of mud.

19. How do scientists use water to detect a volcanic eruption? STOP AT 47:20 to let them write.

**There is chemical and thermal evidence of volcanic fluids in the streams. Somehow the volcano heats the water on the surface.**

20. Scientists can not only detect when but how **big** the eruption will be. Some could devastate the whole **planet**.

21. Three things I learned from the video: **Answers vary**

22. **Mt. Rainier (part of St. Helens) and Yellowstone in Wyoming**

23. Discuss two ways scientists use technology to detect when a volcano will erupt.

**Use seismometers to detect seismic waves; study the CO2 levels, study the water contents downstream next to a volcano, study the inside of the volcano, use computers to record volcano’s activity, etc.**

24. Lahar is the mudflow or debris that flows downhill from a volcano. Explain how Lahar can be deadly and what scientists can do to warn us about it ahead of time.

**Lahar flows too fast for people to outrun. It erodes the rock debris and water so the size of mudflow can increase. As it moves away from the volcano it decreases. It can bury communities, buildings, and people. Scientists have created a warning system for Mt. Rainier by sending a emergency notifications/sirens to the people.**

25. Why do you think people live close to volcanoes when they have the potential to be deadly?

**Geothermal energy can be harnessed by using the steam from underground which has been heated by the Earth's magma. This steam is used to drive turbines in geothermal power stations to produce electricity for domestic and industrial use. Countries such as Iceland and New Zealand use this method of generating electricity.**

**Volcanoes attract millions of visitors around the world every year. Apart from the volcano itself, hot springs and geysers can also bring in the tourists. This creates many jobs for people in the tourism industry. This includes work in hotels, restaurants and gift shops. Often locals are also employed as tour guides.**

**Lava has minerals that can be mined, including gold, silver, diamonds, copper, and zinc.**

**Mineral rich soil is suitable for farming that helps produce crops and rich harvests.**