

What are Volcanoes?



Why do they erupt?

Deep within the Earth it is so **hot** that some rocks slowly melt and become a thick flowing substance called **magma**.

Because it is lighter than the solid rock around it, magma rises and collects in magma chambers.

Eventually some of the magma pushes through vents and fissures in the Earth's surface. A volcanic eruption occurs! Magma that has erupted is called **lava**.

Can you remember?

What is magma? _____

Why do some rocks slowly melt? _____

What is lava? _____

Why does the magma rise? _____

Some volcanic eruptions are explosive and others are not.

How explosive an eruption is depends on how runny or sticky the magma is. If magma is thin and runny, gases can escape easily from it. When this type of magma erupts, it flows out of the volcano. Lava flows rarely kill people, because they move slowly enough for people to get out of their way. Lava flows, however, can cause considerable destruction to buildings in their path.

If magma is thick and sticky, gases cannot escape easily. Pressure builds up until the gases escape violently and explode. In this type of eruption, the magma blasts into the air and breaks apart into pieces called tephra.

Tephra can range in size from tiny particles of ash to house-size boulders.

Explosive volcanic eruptions can be dangerous and deadly. They can blast out clouds of hot tephra from the side or top of a volcano.

These fiery clouds race down mountainsides destroying almost everything in their path.

Ash erupted into the sky falls back to Earth like powdery snow, but snow that won't melt.

If thick enough, blankets of ash can suffocate plants, animals, and humans.

When hot volcanic materials mix with water from streams or melted snow and ice, mudflows form.

Mudflows have buried entire communities located near erupting volcanoes.

Because there may be hundreds or thousands of years between volcanic eruptions, people may not be aware of a volcano's dangers.

When Mount St. Helens in the State of Washington erupted in 1980, it had not erupted for 123 years. Most people thought Mount St. Helens was a beautiful, peaceful mountain and not a dangerous volcano.



Can you remember?

What is tephra? _____

How can a volcano be destructive? _____

What are mudflows? _____

Volcanoes occur because the Earth's crust is broken into **plates** that resemble a jigsaw puzzle.

There are **16 major plates**.

These rigid plates float on a softer layer of rock in the Earth's **mantle**.

As the plates move about they push together or pull apart.

Most volcanoes occur near the edges of plates.

When plates push together, one plate slides beneath the other. This is a **subduction zone**.

When the plunging plate gets deep enough inside the mantle, some of the rock on the overlying plate melts and forms magma that can move upward and erupt at the Earth's surface.

At rift zones, plates are moving apart and magma comes to the surface and erupts. Some volcanoes occur in the middle of plates at areas called **hotspots** -- places where magma melts through the plate and erupts.

Can you remember?

What do the earth's plates look like? _____

How many major plates are there? _____

What do the plates do? _____

What are hotspots? _____

What are some interesting facts you have learned about VOLCANOES?



