



Volcanic eruptions

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INTRODUCTION

A volcano is an opening in the earth's crust through which magma, gases and ash are released to the earth's surface. The molten rock material found in the interior of the earth is called magma. It can be noted that when magma reaches the earth's surface, it is known as lava. Vent is an opening or mouth of a volcano. Fumaroles are the gushing fumes through the gap in the volcano. Volcanic ash consists of fragments of pulverized rock, minerals and volcanic glass, created during volcanic eruptions.

Types of Volcanoes

Based on the frequency of eruption, there are three types of volcanoes:

1. **Active Volcanoes:** Volcanoes which erupt frequently are called active volcanoes. Generally, their vent remains open. Mount Etna of Italy, Cotopaxi in Ecuador are some examples.
2. **Dormant Volcanoes:** These volcanoes may not have erupted in the recent past but there is a possibility of eruption at any time. In other words, they may lie dormant awaiting active eruption anytime. Sometimes gases and steam come out of them. They cause great destruction to life and property once they become active again. Mt. Vesuvius of Italy and Mt. Fujiyama of Japan are examples.
3. **Extinct Volcanoes:** These volcanoes have exhausted their energy and have not erupted during the known geological period. The vent of these volcanoes remains closed with solidified lava. The formations such as craters may be filled with water and crater lakes may be formed. The slopes of these landforms may be covered with vegetation. Popa in Myanmar and Mt. Kenya in eastern Africa are the examples of extinct volcano.

Cause

When a part of the earth's upper mantle or lower crust melts, magma forms. A volcano is essentially an opening or a vent through which this magma and the dissolved gases it contains are discharged. Although there are several factors triggering a volcanic eruption, three predominate: the buoyancy of the magma, the pressure from the exsolved gases in the magma and the injection of a new batch of magma into an already filled magma chamber.

The buoyancy of the magma: As rock inside the earth melts, its

volume increases producing a melt that is less dense than the surrounding rock. This lighter magma then rises toward the surface by virtue of its buoyancy. Finally, the magma reaches the surface and erupts.

The pressure from the gases in the magma: Magmas also contain dissolved volatiles such as water, sulfur dioxide and carbon dioxide. Experiments have shown that the amount of a dissolved gas in magma at atmospheric pressure is zero, but rises with increasing pressure.

Injection of new magma into a chamber that is already filled with: This injection forces some of the magma in the chamber to move up in the conduit and erupt at the surface.

Volcanic gases

Most gases from a volcano quickly blow away. However, heavy gases such as carbon dioxide and hydrogen sulfide can collect in low-lying areas. The most common volcanic gas is water vapor, followed by carbon dioxide and sulfur dioxide. Sulfur dioxide can cause breathing problems in both healthy people and people with asthma and other respiratory problems. Other volcanic gases include hydrogen chloride, carbon monoxide, and hydrogen fluoride. Amounts of these gases vary widely from one volcanic eruption to the next.

Volcanic ash

Exposure to ash can be harmful. Infants, elderly people, and people with respiratory conditions such as asthma, emphysema, and other chronic lung diseases may have problems if they breathe in volcanic ash. Ash is gritty, abrasive, sometimes corrosive, and always unpleasant. Small ash particles can abrade (scratch) the front of the eye. Ash particles may contain crystalline silica, a material that causes a respiratory disease called silicosis.

CONCLUSION

Volcanoes spew hot, dangerous gases, ash, lava, and rock that are powerfully destructive. People have died from volcanic blasts. The most common cause of death from a volcano is suffocation. Volcanic eruptions can result in additional threats

to health, such as floods, mudslides, power outages, drinking water contamination, and wildfires. Health concerns after a volcanic eruption include infectious disease, respiratory illness, burns, injuries from falls, and vehicle accidents related to the slippery, hazy conditions caused by ash. When warnings are heeded, the chances of adverse health effects from a volcanic eruption are very low.