



Measures to mitigate harmful effects of volcanic eruptions

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DESCRIPTION

A volcano is an opening or rupture in the surface of the earth through which gases, volcanic ash, and hot liquid or semi-liquid rock can escape. They often develop when tectonic plates collide or diverge, but volcanic hotspots can also cause them to form in the midst of plates. When lava and gas are released from a volcano, often explosively, it is called an eruption. A "glowing avalanche," which occurs when recently erupted lava slides down the flanks of a volcano, is the most hazardous type of eruption. They are capable of swift movement and can reach temperatures of 1,200 degrees Fahrenheit. Lahars and ash fall are other dangers (mud or debris flows). Volcanoes frequently result in population relocating and food shortages.

MAIN CAUSE OF A VOLCANO

The way heat travels beneath the surface of Earth causes volcanoes to erupt. Convection, or the transmission of heat by movement of a heated fluid, is the primary mechanism by which heat is transferred from the planet's interior to its surface. In this instance, the fluid is lava, which is partially melted rock that is created when the Earth's mantle and crust melt. In the final stage of this heat-releasing process, the magma rises and bursts at the surface through volcanoes.

The majority of volcanoes have a connection to plate tectonic activity. For instance, the edges of the enormous solid granite plates that make up the surface of the Earth are where volcanoes in Japan, Iceland, Indonesia, and many other locations can be found. When a plate sinks beneath water held in the sub ducted plate is pushed out of it by intense pressure, creating heat

that melts adjacent rock and creates lava. The magma rises because it is more buoyant than the rock around it, and it may gather in chambers closer to the surface. A chamber's pressure may rise as it gets more and more full. Cracks frequently appear above when the upward pressure created by the rock below the chamber is greater than the downward pressure produced by the rock above the chamber. Eventually, the pressure from above can force the magma through fissures and vents on the surface, where it will turn into lava. In actuality, the term "volcano" specifically refers to such a vent; however it can also be used to describe the landform formed by the build-up of solidified lava and volcanic debris close to the vent.

MITIGATION MEASURES OF VOLCANIC ERUPTION

Building reinforcement, land zoning and evacuation, and the development of control systems to lessen the effects of flooding are typical mitigation strategies for volcanic eruptions.

Volcanic hazard maps

A volcanic risks map is one of the most popular and practical ways to convey knowledge discovered *via* in-depth investigations of a volcano's eruptive history.

These maps outline zones corresponding to each category of potential hazard and its relative seriousness. Such maps can also include probabilities of future consequences if there is enough precise data available. These maps are important for identifying areas of refuge in the event of an eruption, critical population centres,

communication connections, and infrastructure in relation to hazard zones.

Hazard zonation for lava flows

The frequency with which places have been covered by lava in the recent geologic past is used to create hazard maps for lava flows. In addition, they consider topography, average lava flow lengths of the volcano, and locations of possible vents.

Hazard zonation for volcanogenic tsunamis

These can be predicated on the flooding evidence from previous tsunamis, but this is challenging given the minimal geological evidence these catastrophes have left behind. The zone limitations must take into account the tsunami wave's source, mechanism, magnitude, and coastal geography's amplifying effects.