VOLCANOES

A volcano is a vent through which molten rock escapes to the Earth's surface. Unlike other mountains, which are pushed up from below, volcanoes are built by surface accumulation of their eruptive products—layers of lava, ashflows, and ash. When pressure from gases within the molten rock becomes too great, an eruption occurs.

The United States is third in the world, after Japan and Indonesia, for the number of active volcanoes. Since 1980, as many as five volcanoes have erupted each year in the United States.

Eruptions are most likely to occur in Hawaii and Alaska. For the Cascade Range in Washington, Oregon, and California, volcanoes erupt on the average of one to two each century.

Also, when Cascade volcanoes do erupt, high-speed avalanches of pyroclastic flows, lava flows (hot ash and rock), and landslides can devastate areas 10 or more miles away. Lahars can inundate valleys more than 50 miles downstream.

The island of Hawaii (the largest of the Hawaiian islands) experiences thousands of earthquakes associated with active volcanoes each year. While most of these are too small to feel, about once a decade a large quake shakes the entire island and causes widespread damage.

Volcanoes produce a wide variety of hazards that can kill people and destroy property. Large explosive eruptions can endanger people and property hundreds of miles away and can even affect the global climate.

Volcanic hazards include:

- Toxic gases.
- Lava and pyroclastic flows.
- Landslides.
- Earthquakes.
- Explosive eruptions.

Eruptions can be relatively quiet, producing lava flows that creep across the land at 2 to 10 miles per hour (mph). Explosive eruptions can shoot columns of gases and rock fragments tens of miles into the atmosphere, spreading ash hundreds of miles downwind.

VOLCANOES (CONTINUED)

Lava flows are streams of molten rock that either pour from a vent quietly or erupt explosively as lava fountains. Because of their intense heat, lava flows are also great fire hazards. Lava flows destroy everything in their path, but most move slowly enough that people can move out of the way. The speed at which lava moves across the ground depends on several factors, including the:

- Type of lava that has erupted.
- Steepness of the ground.
- Rate of lava production at the vent.

Volcanic eruptions can be accompanied by other natural hazards, including:

- Mudflows (including lahars).
- Flash floods.
- Wildland fires.
- Tsunamis (under special conditions).
- Earthquakes.

Historically, lahars have been one of the deadliest volcano hazards. Lahars are mudflows or debris flows composed mostly of volcanic materials on the flanks of a volcano. These flows of mud, rock, and water can rush down valley and stream channels at speeds of 20 to 40 miles per hour and can travel more than 50 miles.

Lahars can occur both during an eruption and when a volcano is quiet. The water that creates lahars can come from melting snow and ice, intense rainfall, or the breakout of a summit crater lake.

VOLCANOES (CONTINUED)

Volcanic ash is actually fine, glassy rock fragments that can affect people and equipment hundreds of miles away from the cone of the volcano. Volcanic ash will:

- Cause severe respiratory problems.
- Diminish visibility.
- Contaminate water supplies.
- Cause electrical storms.
- Disrupt the operation of all machinery.
- Collapse roofs.

The key steps in volcanic eruption preparedness are:

- Understanding the risk. Take time to learn about the risk from volcanic eruption in your area.
- Talking to your insurance agent. Find out what your homeowner's policy will or will not cover in the event of a volcanic eruption.
- Prepare a disaster supply kit, including goggles and dust mask for every family member.
- Developing an evacuation plan. Everyone in your family should know where to go if they have to leave.
- Following evacuation orders. Staying at home to wait out an eruption, if you are in a hazardous zone, could be very dangerous. Take the advice of local authorities.
- Avoiding areas downwind and river valleys downstream of the volcano. Debris and ash will be carried by wind and gravity. Stay in areas where you will not be exposed further to volcanic eruption hazards.
- If outside, protecting yourself from ashfall. Volcanic ash will cause severe injury to breathing passages, eyes, and open wounds, and irritation to skin.
- Being prepared for accompanying hazards. Know how to respond to reduce your risk.

VOLCANOES (CONTINUED)

Take the following measures to protect yourself from ashfall:

- Wear long-sleeved shirts and long pants.
- Use goggles to protect your eyes.
- Wear eyeglasses instead of contact lenses.
- Use a dust mask or hold a damp cloth over your face to help you breathe.
- Stay away from volcanic ashfall areas. The fine, glassy particles of volcanic ash will increase the health risk to children and people with existing respiratory conditions such as asthma, chronic bronchitis, or emphysema.
- Clear roofs of ashfall. Ashfall is very heavy and can cause roofs to collapse, especially if made wet by rainfall. Exercise great caution when working on a roof.
- Avoid driving in heavy ashfall. Driving will stir up volcanic ash that can clog engines and stall vehicles. Moving parts, including bearings, brakes, and transmissions, can be damaged from abrasion.
- If you have a respiratory ailment, avoid contact with any amount of ash. Stay indoors until local health officials advise that it is safe to go outside.