# Different Volcanoes

(Source: Mining Matters)

Background

A volcano is a vent or fissure through which molten and solid materials and hot gases pass upward to the Earth's surface. There are three different types of volcanoes. **Shield** volcanoes, the largest type of volcano, are made almost entirely of solidified lava flows. The lava, which is molten rock that flows down the side of the volcano, erupts through vents or openings that develop along the sides and base of the volcano. Multiple fluid (runny) lava flows spread over great distances and cool in thin sheets. This process creates a gently sloping cone. Hawaiian volcanoes are examples of shield volcanoes.

Shield

Cinder Cone

A **cinder**, or tephra, cone volcano is the simplest and often the smallest type of volcano. They are formed when lava is quickly expelled from the main vent of the volcano. Gas dissolved in the lava blows it into the air and the lava solidifies into small fragments that fall as cinders/tephra around the outside of the vent and form a circular cone. Most cinder cones have a well formed bowl-shaped crater at the summit of the volcano. Cinder cones range in size from 10 to several hundred metres high. There are many examples of cinder cone volcanoes along the western coast of North America, including Cinder Cone and Tseax Cone (Aiyansh Volcano) in British Columbia.

Composite volcanoes or stratovolcanoes are typically steep, large symmetrical cones that have been built from alternating layers of lava flows, cinders, ash and other volcanic material. A central vent is located within the crater at the top of the volcano. One of the essential features of a composite cone is a network system through which magma rises to the top of the volcano from an underground reservoir deep in the earth's crust. With each eruption, the cone grows larger. Some composite volcanoes reach heights of 2,800 metres. Mount Garibaldi, located in British Columbia, is a composite volcano.

Stratovolcano
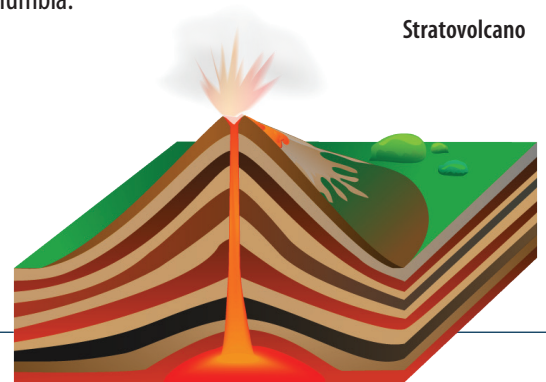
Purpose:

To learn and observe two types of volcanic eruptions.

Materials:

- Empty film canisters
- Vinegar
- Baking soda
- Protective eyewear
- Glitter and/or food colouring (optional)
- Plastic table cloth

Directions:

Consider doing this activity outside. Invite your family to join you at the picnic table or on the lawn.

1. Ask your family what they know about volcanoes. Explain that in this activity they will learn about different types of volcanic eruptions.

2. Lay the table cloth on the picnic table or the lawn, wherever you will be creating your volcanoes.

3. Add vinegar to two film canisters, so that they are ¼ full. Place them on the ground where they can be observed. Add glitter and food colouring for an added effect.

4. Fill the lids of two film canisters with baking soda.

5. Ask your family to stand 1.5 metres away to avoid the splatter zone.

6. Wearing your protective eye wear, empty the baking soda from the canister lid into one of the canisters. Do not put the lid onto the canister. Instead, watch as gas builds in the volcano and the lava erupts over the edge of the container.

7. Tell your family that a volcano may not erupt violently if the gases that are present in lava can easily escape. Ask them what they think could happen if gases in the lava are blocked from escaping.

8. Ask your family to stand 2.5-3.0 metres away from the second canister. Quickly flip the lid and its contents into the canister and attach the lid to the canister.

9. Step back and observe what happens.

10. Discuss your observation with your family and ask them to explain why the canister lid shot high into the air. Tell them that it is because built up gases could not escape.

If you are interested in learning more about Earth science and volcanoes visit the Mining Matters website to download Core Concepts – Structure of the Earth or the Bozeman Science YouTube Channel and watch the Geology Video