

WEIRD SCIENCE**● Bubble, Boil, & Squirt**

In parts of Yellowstone National Park boiling water blasts into the sky, lakes of strange-colored mud boil and gurgle, and hot gases hiss from the ground. What are these strange geologic features? What causes them? The story begins deep in the Earth.

Old Geysers

One of Yellowstone's main tourist attractions is a *geyser* called Old Faithful. Erupting every 60 to 70 minutes, Old Faithful sends a plume of steam and scalding-hot water as high as 60 m into the air. A geyser is formed when a narrow vent connects one or more underground chambers to Earth's surface. These underground chambers are heated by nearly molten rock. As underground water flows into the vent and chambers, it is heated above 100°C. The superheated water quickly turns to steam and explodes first toward the surface and then into the air. And Old Faithful erupts right on schedule!

Nature's Hot Tub

A *hot spring* is a geyser without pressure. Its vents are wider than a geyser's, and they let the underground water cool a little and flow to the surface rather than erupt in a big fountain. To be called a hot spring, the water must be at least as warm as human body temperature (37°C). Some underground springs are several hundred degrees Celsius.

Flying Mud Pies

Mud pots form when steam or hot underground water trickles to the surface and chemically weathers and dissolves surface features, such as rocks. The mixture of dissolved rock and water creates a boiling, bubbling pool of sticky liquid clay. But don't get too close! Occasionally, the steam will rise quickly and forcefully enough to make the mud pot behave like a volcano. When it does, a mud pot can toss car-sized gobs of mud high into the air!

Some mud pots become *paint pots* when microorganisms or brightly colored minerals are mixed in. For instance, if there is a lot of iron in the mud, the paint pot will turn reddish brown or yellowish brown. Other minerals and bacteria can make the mud white or bluish in color. Some paint pots may even gurgle up blobs in several different colors.

What Do You Think?

Some people believe that tapping geothermal energy sources such as geysers could harm the delicate ecology of those sources. Find out about the benefits and the risks of using geothermal energy. What is your opinion?