

Student activity cards:

<p>The geothermal waters have been used for years in Rotorua to heat homes, businesses and institutions.</p>	<p>Lack of money & government thought, allowed people to drill their own small bore holes. These were inefficient and wasted a lot of heat.</p>	<p>The 1950s saw electricity restrictions put in place. People were encouraged to drill their own wells in the garden to heat their homes.</p>
<p>During the 1970s the geothermal field under Rotorua fell and local geysers and springs started to decline.</p>	<p>Since 1991, geothermal extraction has been managed. Communal systems of 10 or more homes sharing a well is now required.</p>	<p>Major use of geothermal energy in Rotorua is to heat swimming pools. Mineral pools use geothermal waters and are considered therapeutic.</p>
<p>Te Whakarewarewa geyser dormant 35 years due to bore drilling in the 1950s came back to life on the 12th Oct 2013.</p>	<p>Rotorua is unique for its geothermal activity - springs, geysers and mud. Pohutu geyser is one of the most photographed attractions.</p>	<p>The steam or bubbling water at the surface may go on for hundreds or thousands of meters underground. The system is continuous.</p>
<p>Rainwater seeps deep down into the earth, where it is superheated. Hot water is less dense than cold and it rises to the surface.</p>	<p>Geysers erupt when pressure builds underground. The superheated water flashes to steam as it ejects out of the vent. The cycle then begins again.</p>	<p>Geysers form when hot water comes up from an underground reservoir and passes through a narrow vent to the surface - just like a pressure cooker.</p>
<p>Cold water can run hot in homes and steam cracks open in floors. Fantastic eruptions happen when metal casings break or when new houses are built on old forgotten bore holes that reactivate.</p>	<p>Maoris lived in geothermal areas from early on. Boiling springs were used for cooking and warm pools for bathing, laundry and health. Coloured clays/muds were used for dyes, paints and healing.</p>	<p>Carbon dioxide and hydrogen sulphide are always around. These poisonous gases can build up to levels that can kill in minutes. Poorly ventilated bathing pools and homes are the worst places.</p>
<p>Rotorua has large built-up areas covered in roads, pavements and buildings. This stops gases venting and they build up underground and travel to escape where they can, sometimes in houses.</p>	<p>Geothermal fields are fragile environments and are sensitive to changes in their water supply, earthquakes and landslides. But human activity has been the greatest problem.</p>	<p>Maoris respected the thermal fields, but when wells were sunk to meet tourist & household demand for hot water - with no controls imposed- water levels dropped and geyser activity began to slow.</p>
<p>Geothermal fields can be sustainable if water levels and pressures are maintained. With the enforcing of reduced bore hole drilling, the geysers and hot springs can recover.</p>	<p>Geysers and hot springs rely on pressure and water. Geothermal power stations have reduced the power and awe of some of the major geysers in Rotorua. But new rules mean things are improving.</p>	