**Energy Trapped in the Earth Activity**

In the activity, students will investigate how earth materials can hold and transfer heat energy. Geothermal energy involves using the heat of the earth to heat water, create steam and generate electricity.

Materials:

For each group of 4

* access to a hot plate with a pot of boiling water\*
* rock approximately the size of a golf ball
* tongs
* large Styrofoam cup with lid
* second Styrofoam cup the same size without lid
* thermometer

Safety precautions: Students should remove rocks from the hot water with adult supervision

Preparation: For best results, use one pot of water and hot plate for no more than 6 rocks. Set up hot plates in a safe place and fill pot halfway with water. Place rocks in the bottom of the pot and set on hot plate. Use a thermometer to monitor the temperature of the water. When the water reaches 90°C, turn down hot plate to keep the water temperature in that region. Do not allow the water to boil.

Procedure:

* Each group should obtain 2 Styrofoam cups and one lid.
* Fill one cup half way with water. (Water will need to cover rock completely.)
* Place first cup inside of second cup to improve insulation.
* Punch a hole in the lid of the cup for the thermometer. (If necessary, use tape to close up hole in lid to prevent any of the heat from escaping.)
* Obtain the original temperature of the water in the cup.
* Using a pair of tongs, remove a hot rock from the pot and transfer it to the cup.
* Replace the lid on the cup.
* Observe the temperature of the water after the rock has been added.
* Record the final temperature of the water after it is finished changing.

Have students consider the following questions:

* What happened to the temperature of the water?
* What do you predict would happen if the rock was in an ice bath and the water was warm?
* How do your observations relate to the concept of Geothermal Energy?