



Seep Hunt

Middle School - High School Earth's History

Duration

30-45 minutes

Locations

La Brea Tar Pits Museum

Pit 91

Hancock Park

Supplies

- Worksheet
- Pencil
- Clipboard (optional)

Standards

NGSS

ESS2.B

S+E Practices

3, 4, 6, 7, 8

CCSS ELA

RST.6-8.1

Vocabulary

Asphalt • Plate tectonics

- Asphalt Seep • Fault line • Pleistocene Epoch • Entrapment • Oil field



Concepts

- Southern California is tectonically unique.
- Tectonic activity in Southern California helped form the La Brea Tar Pits.

Objectives

- Students will understand the role of plate tectonics in the formation of asphalt seeps.
- Students will be able to identify asphalt seeps in Hancock Park

Outline

1. Before your visit, review plate tectonics vocabulary with students.
2. At the Museum, students will visit the Pit 91 Viewing Station's exhibit on plate tectonics before searching for asphalt seeps in Hancock Park.

References & Resources

For more information on the formation of asphalt seeps and the geologic history of the Tar Pits, review “Return to the Ice Age: The La Brea Exploration Guide,” available for download at <http://www.tarpits.org/sites/default/files/Exploration%20Guide.pdf>.

Geologic history is covered in Section 1, pages 3-6.

Pre-Visit

Review plate tectonics vocabulary and “Return to the Ice Age” (if desired) with students prior to your trip. Ensure that students have a working knowledge of plate tectonics and vocabulary.

Museum Visit

During their Museum visit, students will visit the Pit 91 Viewing Station, and use their vocabulary list to answer questions about the formation of asphalt seeps and the role that asphalt plays in entrapment.

Then, students will explore Hancock Park to search for asphalt seeps.

La Brea Geology Vocabulary List

Look over these terms and make sure you are familiar with them before your trip.

Term	Definition
Asphalt	<p>A sticky, black, viscous substance that can be liquid or semi-solid. At the La Brea Tar Pits, the asphalt is comprised of naturally occurring crude oil.*</p> <p><i>*“Tar” is a common misnomer often ascribed to the asphalt at the La Brea Tar Pits.</i></p>
Plate Tectonics	<p>The movement of the earth’s crust and uppermost mantle. Tectonic plates move in relation to one another at one of three types of plate boundaries: <u>convergent</u> boundaries, <u>divergent</u> boundaries, and <u>transform</u> boundaries.</p> <p>Earthquakes and volcanoes are the results of plate movement.</p>
Asphalt Seep	<p>A place in which crude oil seeps up from under the ground and mixes with sediments at the surface to form a shallow layer. Sometimes caused by earthquakes.</p>
Tectonic Plate	<p>Pieces of the earth’s crust and uppermost mantle. Los Angeles is near the boundary of the <u>North American Plate</u> and the <u>Pacific Plate</u>.</p>
Fault Line	<p>Fractures in the earth’s crust caused by the movement of tectonic plates. Los Angeles is near the <u>San Andreas Fault</u>.</p>
Pleistocene Epoch	<p>The period of time from 2.5 million to 10,000 years before our present time. During the Pleistocene Epoch, there were multiple ice ages and temperatures reached both record highs and lows.</p> <p>The animal fossils in the Tar Pits Museum are from the Pleistocene Epoch.</p>
Entrapment	<p>The process by which ancient animals became mired in asphalt seeps.</p>
Oil Field	<p>A subsurface pool of crude oil. Much of Los Angeles sits above the <u>Salt Lake Oil Field</u>.</p>

Inside Pit 91

Visit the Pit 91 Viewing Station and gather as much information as possible. Then answer:

1. Where does asphalt come from?
2. How does crude oil get pushed up to the surface?
3. What role did asphalt play in entrapment?

Explore...

Explore Hancock Park and search for asphalt seeps. Some are behind fences and cones, but you'll find others hidden in plant beds and in the grass. If you'd like, you can find a clean stick in the park to poke the asphalt, but be careful to keep it off your clothes!

1. How many asphalt seeps did you find?
2. How would you describe the seeps you found? (Think about size, appearance, smell, viscosity)
3. What does the number of seeps in the Park tell us about the tectonic activity in this area?