



The La Brea Tar Pits are located in Los Angeles.
5801 Wilshire Blvd, Los Angeles, CA 90036

The La Brea Tar Pits include the Page Museum ([click here for tickets](#)) - there are also ways to [visit the museum for free](#), as well as a large outdoor space that is open to the public.

Both [museum lot and street parking](#) are available, but make sure you follow all street signs if you elect street parking.

Our activities below will highlight the outdoor spaces, which include Lake Pit, active excavation sites and Hancock Park. **Never touch the asphalt when visiting the tar pits.**

BEFORE WE START...

WHAT IS AN ICE AGE?

An **Ice Age** is a period of time when Earth's temperatures are significantly colder and more of the Earth is covered by **glaciers** (large sheets of ice). Scientists have determined that the Earth has experienced five significant ice ages in its history, the most recent ending around 11,700 years ago.

WHAT IS A TAR PIT?

A "tar pit" forms when **asphalt** (a form of oil) seeps to the Earth's surface. The asphalt is very **viscous** (thick and sticky). Since the asphalt is so sticky, it causes animals to become trapped if they enter into the pit. Over 3.5 million fossils have been removed from the La Brea Tar Pits, from organisms that lived during the last Ice Age!

ACTIVITY 1: WHAT'S THAT SMELL?

As you approach Lake Pit, you will probably notice a specific smell. **How would you describe the smell? What does it remind you of?** The bubbling you see in Lake Pit is methane (natural gas). However, **methane** does not have an odor. If you said the smell reminded you of rotten eggs, you are probably smelling **hydrogen sulfide**. **Where does this come from?** Both methane and hydrogen sulfide are made when bacteria break down. Plants and animals from the Ice Age were trapped in the thick, sticky asphalt. Bacteria live on these trapped plants and animals, breaking them down (called decomposing) and this is what creates the gasses.



The gasses get trapped, but can bubble up and out for you to see and smell! Human noses are sensitive to sulfur, which is why the smell is so noticeable for us (even in tiny amounts). Humans are sensitive to the smell of sulfur because it can be associated with things like rotten food.

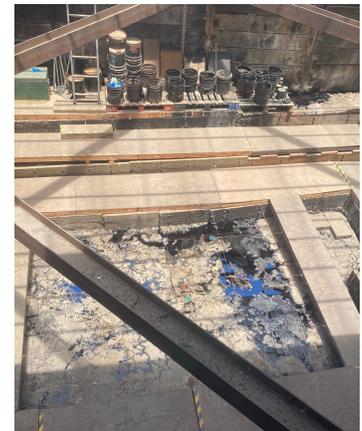
So how does a smell travel anyway? Some molecules are more **volatile**, meaning they **vaporize** (turn into a gas) more easily. Once a molecule is in gas form, it can travel

through air (which is a mixture of different gasses) and reach your nose. Even though the trapped plants and animals are decomposing in Lake Pit, you are not smelling them directly, only the volatile components.

Let's think about when you first noticed the smell. How far away were you? Did the smell change as you got closer to Lake Pit? Hydrogen sulfide (H_2S) is a small molecule that only has three atoms - two hydrogens and one sulfur that allows it to travel quickly over long distances. We can smell it because it travels far as a light gas and our noses are sensitive to it. Was it a windy day? If it is not windy, then the smell will travel in all directions, but wind can help carry the gas further. Depending on where you are standing, you might smell it more or less. Try moving around to see where the smell is strongest. Ask your friends and family if they can smell it too - all of our noses are unique!

ACTIVITY 2: EXCITING EXCAVATIONS

Outside of the museum you can visit active **excavation sites**, or locations where scientists remove fossils from the pit. *When you visit one of these, what do you see?* Scientists have to be very careful when they dig up fossils. First, scientists do not want to damage the fossil itself. Second, scientists want to record and track where each fossil was found. Fossils from several organisms are usually mixed together, so scientists must work carefully and to keep their data organized. If you visit the site when scientists are working, look at their tools. *When do scientists use larger tools (like hammers) and when do they use smaller tools (like dental picks)?* You'll probably notice scientists taking notes and pictures of the fossils they've found. *How would you organize your data?* Check out [this video](#) to learn more.



EXTENSIONS:

If you liked these activities, and we hoped you did, consider following up with one of the following:

- 1) To find out what happens to the fossils after they are excavated, [Click here](#) (reading) or [here](#) (3 minute video of "The Curiosity Show") or [here](#) (5 minute video with a Lab Supervisor).
- 2) Make your own Ice Age shadow puppet. Directions available [online](#).

