The Appalachian Basin

What is a basin?

Different regions are split up into different **basins**. A basin, or sedimentary basin, is a regional depression where sediments have accumulated over time through erosion of mountains by wind and water, rising and falling sea levels, and rivers transporting and depositing sediments. The Appalachian Basin covers nine states containing rocks that are between 1.2 billion and 300 million years old. The basin has played an important role in the United States' energy history through coal mining, oil and gas production, and now carbon capture and storage. **Check put the map of the basin to the right!**

Geology of the Appalachian Basin

Below are some of the rock types found in the Appalachian Basin!

Sandstone

Shale

Limestone

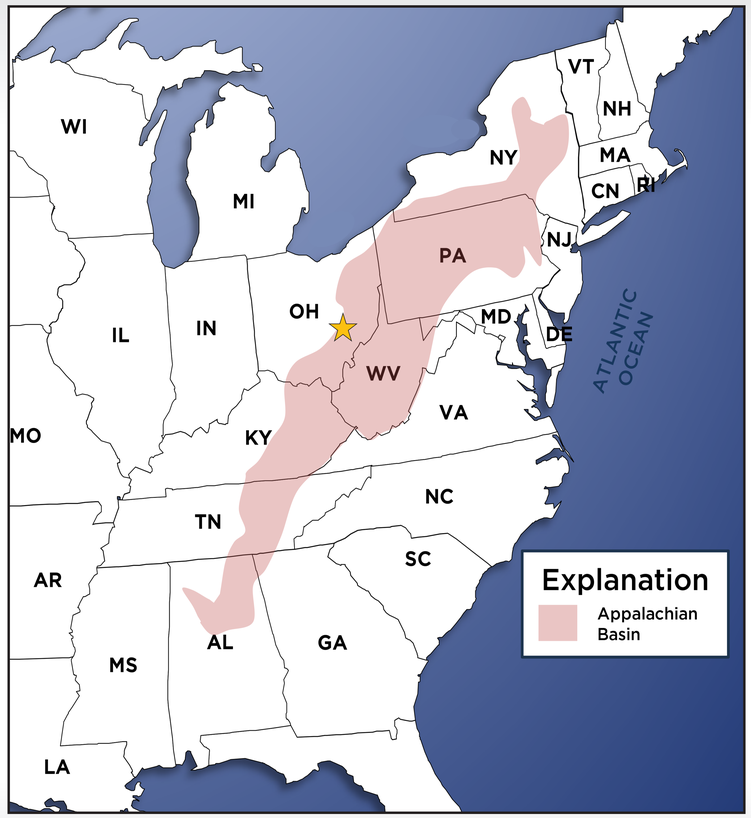
Dolomite

Granite

Rhyolite

Salt

Learn more about these rocks and more by scanning the QR code!



Map showing the range of the Appalachian Basin in the Eastern United States

The Basics of Underground Carbon Dioxide Storage

Carbon dioxide (CO_2) is all around us – it is part of the air we exhale and is essential to plant life and the Earth's natural carbon cycle. Too much carbon dioxide, like that produced by industrial activities, however, can cause catastrophic impacts to the Earth's climate. Therefore, efforts are underway to reduce the amount of CO_2 in the atmosphere. Carbon Capture and Storage (CCS) is a method by which CO_2 emissions are removed from a point-source emitter, such as a factory smokestack, before entering the atmosphere and transferred to an appropriate site where it is pumped into specific rock formations under the Earth's surface for permanent storage.

Where do you store carbon dioxide?

The location underground where the captured carbon dioxide (CO_2) is stored is called a storage reservoir, which is located under a confining layer, or cap rock, and is selected based on specific geologic and geographic requirements. Learn more about the cap rocks and reservoir rocks by reading the information on the display. Finding this site requires a detailed study of the subsurface – the layers of rock under the ground – and understanding the properties such as porosity and permeability.

Definitions
Porosity | Porosity is the amount of empty space in a rock.
Permeability | Permeability is how conencted the empty spaces in a rock are and the ability of air or liquids to flow through them.

How far down is CO_2 stored?

While the depths vary depending upon location, CO_2 storage reservoirs are generally greater than 2,600 feet below the surface, far below Underground Source of Drinking Water (USDW) aquifers. For the Appalachian Basin, the storage reservoir is ~7,250 feet below the surface, and 6,500 feet below safe drinking water levels (located in the Sharon Sandstone layer).

MRCI
Midwest Regional Carbon Initiative

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