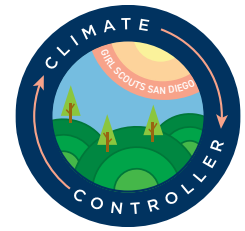


Become a Climate Controller!

BROUGHT TO YOU BY SOLV ENERGY



THE GOAL

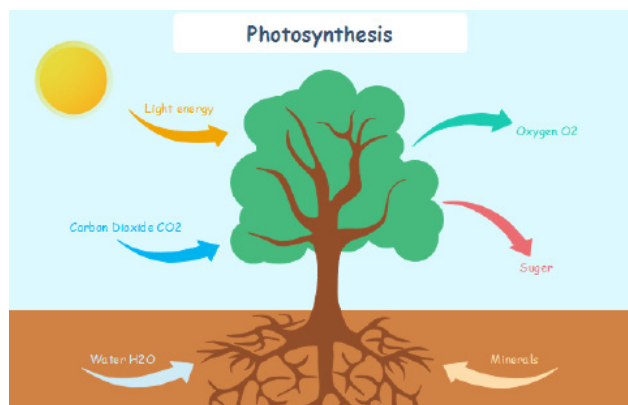
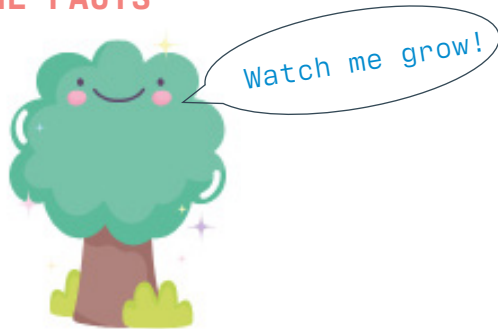
After completing activities associated with learning about trees, Girl Scouts will be able to:

- Identify how trees impact to the health of people and our planet
- Understand the basics of photosynthesis
- How to protect trees
- Become a Climate Controller

BACKGROUND INFORMATION: Visit Discover the Forest (discovertheforest.org), National Arborist Association (arborday.org) and US Forest Service (fs.usda.gov) to find lots of awesome resources on trees and how you can help protect them.

AGE LEVEL: This patch is intended for Daisies – Ambassadors

THE FACTS



TREES: EARTH'S NATURAL AIR FILTERS

Trees help our environment and us in many ways. They help us breathe, grow food, protect our land, and provide shade, wood and even a fun place to play! Perhaps one of the most important things trees provide us is oxygen.

We must do what we can to help protect our trees. Forests cover almost a third of the Earth's surface, including over 700 million acres in the United States alone. Trees help keep our environment clean and healthy by absorbing harmful particles in the air. These invisible particles are known as carbon dioxide. Trees absorb carbon dioxide and release oxygen, an important part of the air we breathe. Think of trees like air filters for the planet!



WHAT IS CARBON DIOXIDE?

Carbon dioxide, or CO_2 , is a colorless and odorless gas. CO_2 is produced in two ways. One way is through natural processes like respiration. When we breathe, we release very small amounts of carbon dioxide into the air around us. Plants, like trees, take in the carbon dioxide we exhale and use it to generate oxygen for us to breathe in return.

The second way humans produce carbon dioxide is by burning fossil fuels like gas, coal, and oil to power our cars and homes. Releasing CO_2 through activities like these can have harmful effects on our planet. Trees can help to absorb some of this excess carbon dioxide, which is why we need to look for ways to help the climate.

HOW DO TREES PRODUCE OXYGEN?

Trees create oxygen through a chemical reaction called photosynthesis. Photosynthesis in trees and plants requires a combination of carbon dioxide, water, and light. They absorb CO_2 and water particles in the air. When the sun's light shines on their leaves, carbon dioxide and water are converted into sugars as food and then oxygen is released into the air. It is estimated that one large tree can provide a day's supply of oxygen for up to four people! How amazing is that?!

BECOME A CLIMATE CONTROLLER!

HUG A TREE

According to the Arbor Day Foundation, in one year a large tree will absorb more than 48 pounds of carbon dioxide from the atmosphere and produce the oxygen we need to breathe in return. Not only that, having more trees in your neighborhood can help keep your home and yard cooler and reduce the amount of energy used to run air conditioners and fans in the summertime. All of this contributes to clean air and a healthy planet for everyone. So next time you take a deep breath, remember to thank trees for all that they do for us!



YOU TO THE RESCUE!

You can become a Climate Controller by protecting trees and becoming a solution for a healthier planet.

HOW CAN I DO THAT?

Here are some ways you can help protect trees:

- Use paper wisely. We can save trees from being cut down by using less paper, using scrap paper, and both sides of the paper
- Recycle paper products (be sure to check which types of paper can and cannot be recycled)
- Use cloth napkins instead of paper napkins
- Use reusable bags when grocery shopping or a reusable lunch box

You could even share these ideas at your school and challenge everyone to step up and help protect trees! Becoming a Climate Controller will inspire you to make a lifelong commitment to help protect trees so they can continue to create oxygen for us and Mother Earth. Tell your family and friends why they should be aware of this, why we should protect trees and the ways that they can help too.

LESSON IDEAS

BREATH OF FRESH AIR

Have you ever wondered how leaves breathe? Plants and Trees use their leaves to recycle carbon dioxide and turn it into food for themselves and oxygen for us. In this experiment you will create an environment where you can see this carbon dioxide/oxygen exchange happening!

Here's how it works:

- Pick a live leaf from any plant but make sure it is freshly picked so it is actively photosynthesizing. Don't pick one up from the ground. Look closely at the leaf. What do you see? How does it feel? Can you hear it breathing?
- Get a clear glass or plastic bowl that is large enough to fit the leaf and fill it with room temperature water.
- Place the leaf in the bowl and submerge it under water by using a small rock.
- Place the bowl in a sunny spot inside or outside. Wait a few hours and voila! You should see small bubbles forming on the leaf and edges of the bowl. If you have a magnifying glass you can even take a closer look.

What you see happening is the same thing as when we hold our breath and let it out underwater. You let out bubbles that rise to the top of the water and this is the same as what you're seeing the leaf do too! When the leaf is submerged under water it is using light to continue the process of photosynthesis. Part of this process is to let oxygen out of the leaves. It is this oxygen that you are seeing as bubbles in the water. While a plant does not really breathe like we do, it does take in and release air. You're seeing the invisible process of photosynthesis!

BECOME A CLIMATE CONTROLLER!

FOREST ARTISTRY OR TREE DETECTIVE



Arborist Challenge! Take a walk through your neighborhood or go on a nature walk and look at all the different types of trees. You could create a scavenger hunt to look at all the things in your surrounding too. Pick a tree, sit under it, and sketch it. Draw sketches of the trunk, bark, and leaves. What shape are the tree branches? The texture of the bark? Is it ridged, smooth, or something else? What about the leaves — draw their shapes, are they flat, or do they have needles? What else do you see in the tree? Any insects, animals, or birds? You could also create a fun Tree Bingo game and draw all the trees you found.

When you've completed your drawings visit treehugger.com to identify the tree parts in your drawing to determine what type of tree you drew.

Enjoy the sunshine and take in that sweet oxygen provided by the tree you're drawing.

DON'T STOP THERE!

Here's a few more ways you can help support tree conservation:

- Plant a tree – find out what native trees grow in your area or support an organization through fundraising to support tree planting
- Find out when National Park week is. Admission is free! Take a nature walk and look at all the different trees within the park. Ask a Park Ranger to tell you more about the trees too.
- Become a Climate Controller by taking the Girl Scouts Tree Promise and add to the 'TreeTracker'! Head over to the Girl Scouts website for more information on how to take the Tree Promise and do your part to help with the goal to plant 5 million trees across the country in the next 5 years! Not only do we want to add more trees to our planet, but we want to protect the ones we already have.

