



Swamp in a Bottle

Swamps and other wetlands are vitally important ecosystems, acting like natural water filters. As fresh water travels towards the ocean, wetlands slow it down, allowing plants and the porous soil to absorb pollutants. Create your own "Swamp in a Bottle" with natural materials to see for yourself.

Please note: This "Swamp in a Bottle" does not make dirty water safe to drink.

Materials

Lidded jar or container

One 2-liter plastic bottle, empty and clean (alternative: a funnel and a clear cup)

Scissors

Tape

Coffee filter or paper towel

Found natural materials (such as: gravel, sand, clay, dirt, old leaves, fresh leaves, pine needles)

Directions

1. **Gather** the natural materials. Be careful not to disturb live plants and animals, take only what you need, and make sure to follow the rules of the natural environment you are visiting.
2. **Prepare** the muddy water by mixing some dirt with tap water in the lidded jar.
3. **With an adult's supervision**, cut the 2-liter bottle into two pieces, about $\frac{1}{3}$ down from the top. If the edges are rough, cover them with tape. (Skip this step if you are using a funnel and a cup.)



4. **In the top part of the bottle,** create your swamp using your found materials:
 - a. **Add** the coffee filter so it sits in the spout.
 - b. **Add** a few layers of dirt. Start with finer dirt, like sand, then add gravel.
 - c. **Add** a few layers of plants. Start with old leaves, then add fresher plants toward the top.
5. **Nest** your swamp model inside the bottom part of the bottle, with the spout facing down.
6. **Pour** some of the muddy water into your swamp to test your filter. Save a little bit of muddy water so you can compare it to your filtered water. Wait while the muddy water filters through your swamp. How long does it take?
7. **Compare** the water that collects in the bottle to the muddy water you started with. Do you notice any differences?
8. **Now, experiment!** Run the water through your swamp multiple times, or try a different sequence of layers in your swamp to see if your results change. What could this tell you about how water filtration works in a real swamp?
9. **Challenge:** Can you build your swamp without the coffee filter? Try layering leaves on the nozzle of your bottle instead.



The Academy is grateful to the LSU AgCenter for providing the inspiration for the "Swamp in a Bottle" activity. Learn more:

<https://www.lsuagcenter.com/profiles/lblack/articles/page1586359626580>