

# **DIY Biosphere**

# **Activity Rundown:**

To learn how a biosphere works, we're going to create our own enclosed ecosystem in the form of a "tabletop biosphere"!

# You will need:

- + An airtight glass container (eg. mason jar)
- + Clean sand or gravel
- + Activated charcoal (you can get this from a pet store or pharmacy)
- + Soil
- + Small plants
- + Decorative items (like rocks, moss, etc.)
- + Water

## Let's do it!

- 1. Thoroughly clean out your glass jar.
- Add a layer of about 2 5 cm of clean sand or clean gravel to the bottom of the jar. This will create a drainage layer and water basin for the excess water in your biosphere.
- 3. Add a thin layer of about 1 2 cm of activated charcoal on top of the sand. This layer will act as a filter to keep your biosphere nice and clean.
- 4. Add a layer of about 5 10 cm of good draining soil.
- 5. Add some decorative items like a rock or piece of wood.
- 6. Add some plants and moss. Very small, slow growing plants (like mosses or ferns) that can tolerate warm, humid, environments are best for the biosphere. You could also add a bug or two, like a beetle or worm. These bugs will provide  $CO_2$  for the plants.
- 7. Give your biosphere enough water so that the sand layer is fairly wet. You won't need very much water to achieve this so be careful when adding the water!
- 8. Cap your biosphere.
- 9. Once you have watered your biosphere, it is ready to self-regulate!
- 10. Place your biosphere near a window but make sure it is not in direct sunlight. If you place your biosphere in direct sunlight the inside will get too hot and you will end up cooking your plants.



11. You may also notice a lot of condensation building up inside your biosphere at first and this means that you may have watered it too much. Open the lid for a day and let some of the water evaporate.



## **Background:**

- A **biosphere** is any closed, self-regulating system of **ecosystems** (or ecosystem). The biosphere is all about **life**. Scientists use the term biosphere to describe our living world.
- The biosphere extends to the upper areas of the sky (**atmosphere**) where birds and insects can be found. It also reaches down to the dark caves deep in the ground (**lithosphere**) or to the bottom of the ocean (**hydrosphere**).





shutterstock.com • 1520499716

• There is a man made biosphere located in the state of Arizona! It's called the Biosphere 2 and contains a rainforest, an ocean with a coral reef, a mangrove wetland, a Savannah grassland, a fog desert, and farmlands. Its mission is to serve as a center for research, outreach, teaching, and lifelong learning about Earth, its living systems, and its place in the universe!



#### **Resources:**

- <u>http://thescienceclassroom.org/how-to-make-your-own-self-contained-ecosystem-biosphere/</u>
- http://www.geography4kids.com/files/land\_intro.html



### Reach out!

We would love to hear from you about all the amazing STEM projects you are doing at home! Show us your finished products on any of the following social media platforms by tagging us or by using the following hashtags. We hope these projects have brought some excitement to your day during these difficult times.

Let us know how we did! Please <u>click here</u> to fill out a short survey on how well we did and what you would like to see more of in the future. Thank you!

Twitter: **@MyMindsInMotion** Facebook: **@mindsinmotion2014 & @ucactiveliving** Instagram: **@ucalgaryactive** 

> Please use the following hashtags! #ucalgarycamps #ucalgarytogether