

Fake Worms Demonstration Guide

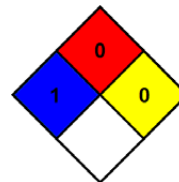
(as inspired by generationgenius.com)

This experiment investigates the relationship between natural resources and synthetic materials through the synthesis of calcium alginate (a synthetic material) from calcium chloride and sodium alginate (natural resources). This experiment can be effective and enjoyable for a wide age-range of students, spanning from kindergarten to eighth grade. For younger students, a demonstration conducted by the supervising instructor is more likely to be safe and effective, but the experiment should be easy to reproduce at a group or individual level for older students.

The related SEEd standard for this experiment is Standard Grade 8.1.4, "Obtain and evaluate information to describe how synthetic materials come from natural resources, what their functions are, and how society uses these new materials. Examples of new materials could include medicine, foods, building materials, plastics, and alternative fuels."

Safety Precautions:

1. Calcium chloride may cause eye, skin, and respiratory irritation. Gloves are recommended when handling the pure form. MSDS available here: [Calcium Chloride](#)
2. Sodium alginate is not considered hazardous or potentially dangerous in any way, but the MSDS is still available here: [SAFETY DATA SHEET](#)
3. If food coloring is used, be mindful of possible irritation should the pure food coloring make contact with the eyes.
4. Calcium alginate (the final product) is not considered hazardous or potentially dangerous in any way, but the MSDS is still available here: [Safety Data Sheet](#)



Materials (per experiment):

- Large bowl (large enough to hold one cup of water with plenty of room to stir)
- Mixing spoon
- Plastic water bottle
- Food coloring (optional)
- 0.5 tsp pure sodium alginate powder (I purchased mine from [Amazon](#))
- 2 Tbsp pure calcium chloride (I purchased mine from [Amazon](#))
- Two total cups (16 fl. oz.) of tap water
- Pair of gloves
- Pair of safety goggles

Procedures:

1. Put on safety goggles
2. Fill bowl with 1 cup water
3. Carefully stir in 2 Tbsp calcium chloride into bowl with water, mixing immediately
4. Mix until calcium chloride is entirely dissolved

5. Fill water bottle with 1 cup water
6. Place 4-5 drops of food coloring into the water bottle (optional)
7. Quickly mix in 0.5 tsp sodium alginate into water bottle, then immediately shake the water bottle for >30 seconds
8. Continue shaking until sodium alginate is mostly dissolved
9. In one continuous stream, pour the contents of the water bottle into the bowl
10. Wait at least 10 seconds
11. Enjoy the newly-formed “worms” (calcium alginate)!

Disposal of final product

Disposal should comply with all household and non-household settings. No special precautions are required for disposal of calcium alginate as per Utah Waste Code.

Experiment duration: 15-20 minutes**Total cost: <\$1.00/experiment**