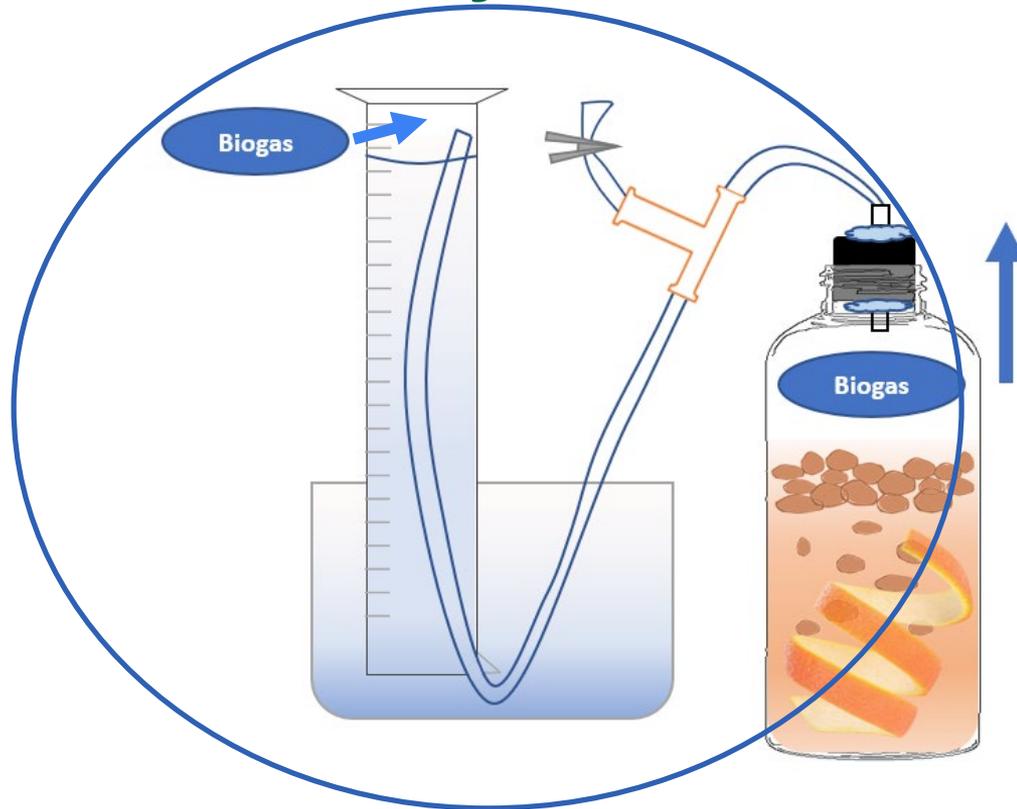


Constructing the Biodigester: Creating the gas collection system

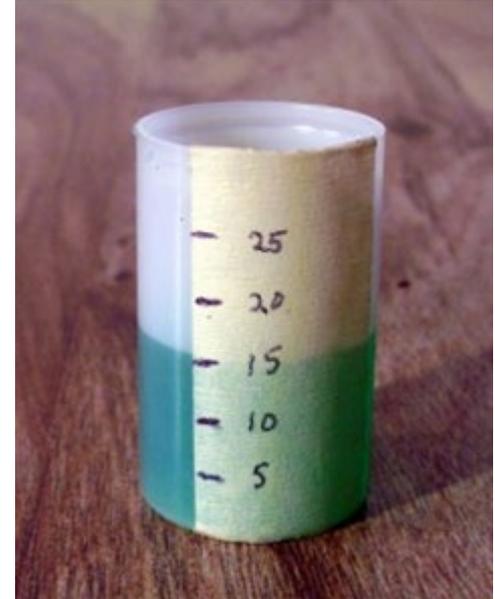
The gas collection system



Building the gas collection system

Materials:

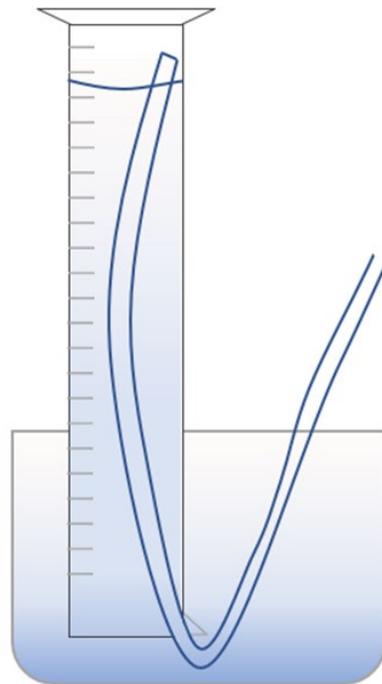
- Graduated cylinder: ideally glass, but any kind will do (including hand-calibrated, like the one on the right)
- Shallow basin, like a bowl or plastic container
- Flexible plastic tubing, at least as long as 2x height of the glassware
- Water
- Duct tape to stabilize the system if needed



Building the gas collection system

Before getting started, note the following:

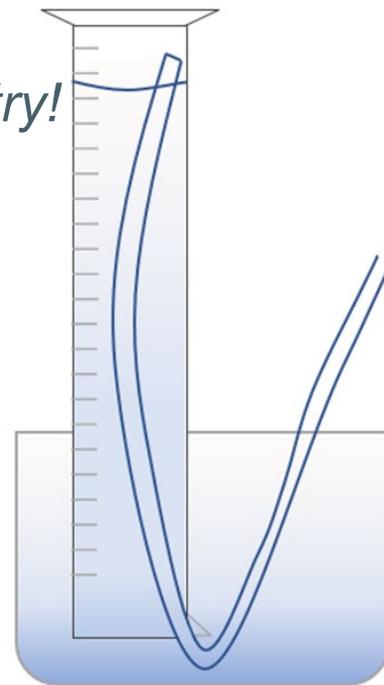
Setting up the gas collection system is tricky. The graduated cylinder must be filled with water and very carefully flipped upside down into a shallow basin of water.



Building the gas collection system

*These steps will take practice –
it's okay if you don't get them right on the first try!*

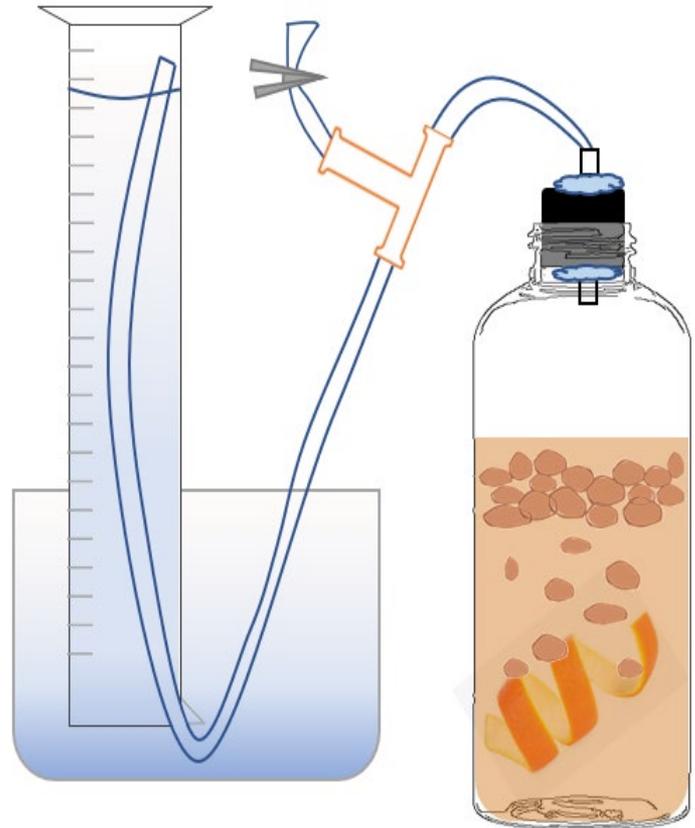
1. Fill the shallow basin partially with water.
2. Fill the graduated all the way to the top with water.
3. Put your hand or a card over the top of the graduated cylinder.
4. Quickly flip the full graduated cylinder upside-down, into the shallow basin of water.
5. Remove your hand.
6. Carefully insert the tubing into the graduated cylinder.
7. Make note of the amount of water in the graduated cylinder. This is your Day 0 measurement of the water level.
8. If needed, stabilize the system with duct tape so it isn't wobbly.



Putting it all together

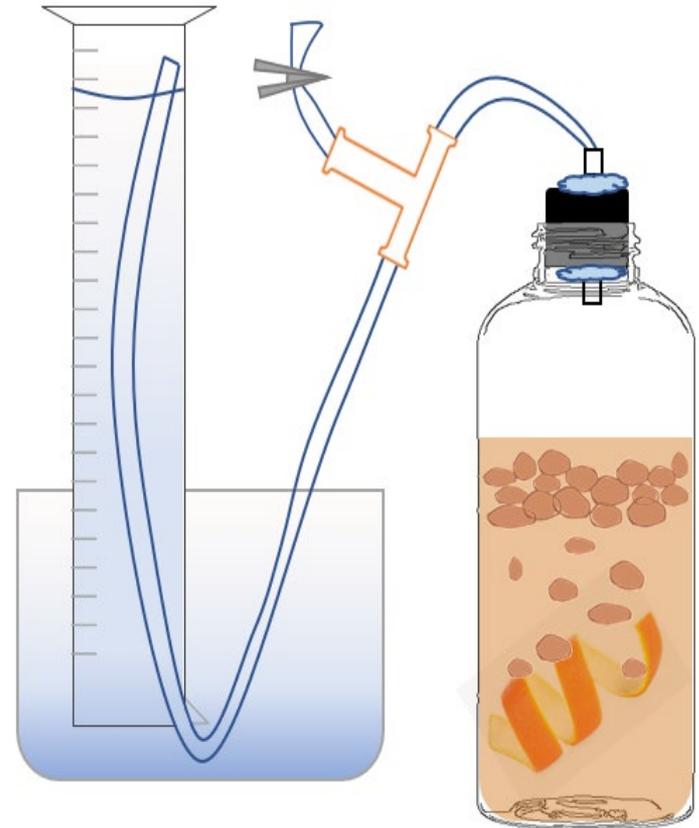
Now we have our gas collection system and our biodigester. To attach them, we will need:

- Flexible plastic tubing:
 - One ~20 cm piece
 - One ~8 cm piece (or two ~8 cm pieces, if the rubber stopper has two holes)
- T fitting
- Clamp (or two, if the rubber stopper has two holes)



Putting it all together

1. Attach the 20 cm piece of flexible tubing to the rigid tubing in the rubber stopper.
2. Connect this piece of tubing and the gas collection tubing to the T fitting.
3. Cut another small piece of flexible tubing, about 8 cm, and attach it to the T fitting. Use the clamp to seal the tubing shut, so no gas can enter or exit the tube.
4. If using a two-holed rubber stopper, attach the second 8-cm piece of tubing to the rigid tubing in the second hole. Attach a clamp, and remove it only when taking digestate samples.



Discussion questions

Who can describe what is happening in each part of the biodigester?

How will we take our biogas measurements?

- Biogas production
- Methane content

How will you take the other measurements needed for your group's experiment?

