

Name: _____



You will need

- 2 plastic cups
- Permanent marker
- Drinking straw
- Bromothymol blue indicator (usually available in pet stores)
- Safety glasses
- Used straw container
- Waste water bucket



WARNING: Safety first! Please wear safety glasses to prevent any indicator splashing into your eyes and please use one cup and straw per person. No sharing of water or straws.



What to do

1. Put on the safety glasses.
2. Label the cups A and B.
3. Add 5 drops of Bromothymol Blue to each cup.
4. Two thirds fill the cups with water
5. Using one straw, blow into the cup B for 30 seconds. Note the change of colour of the water.
6. Place the straw in the used straw container and tip the water into the bucket.



Questions

Write what happens to the water in the cup that you blow in.

Starting colour: _____

End colour _____

What do you think is happening in the water to make the colour change? (hint: look at the experiment title!) Why could this be a problem for creatures in the ocean?

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What's happening?

Indicators are chemicals that change colour when they are in acids or bases.

Bromothymol Blue, is green in neutral solutions like water and yellow in acids. What you are seeing in the experiment is the water changing from a neutral or slightly base substance, to an acid because carbon dioxide (CO₂) from your breath has bubbled through the water.

When CO₂ gas is dissolved in water the solution becomes a weak acid. This can lead to trouble for the oceans and the creatures that live in it. Much of the increasing levels of atmospheric carbon dioxide (CO₂) will be absorbed into the oceans, but this will take several centuries.

More CO₂ in the ocean will make it more acidic – this is called ocean acidification. Currently the ocean is very slightly alkaline. Making it more acidic is dangerous – for example, it can stop many animals from being able to make shells.

Preventing ocean acidification is just one of the reasons we need to reduce our CO₂ emissions. Storing CO₂ in suitable rock formations deep underground and sometimes under the sea bed, is one way of reducing the CO₂ in the atmosphere and therefore reducing the CO₂ that has to be absorbed by the oceans.