**Water Clarity and pH**

Today we are going to be investigating the water clarity and pH of the pond behind me. In today's world, ponds are at threat from a variety of pollution sources, from pollution waste from agricultural and industry to just everyday waste in our lives. Pollution can lead to an increase in nutrients in the pond leading to eutrophication - this means the water will become cloudy; less clear; allowing less light into the water. This means plants won't be able to photosynthesise and produce oxygen. Without that, a lot of animals living in the pond would die.

Today we're going to investigate the clarity of the water first. Please remember when pond dipping to stay safe. Don't pond-dip in ponds where you see blue or green algae and adhere to warning signs. Be aware the sides of the pond may be steep and slippery; be safe when working with dangerous litter; and do not pond dip on frozen ponds.

Cover up any cuts or open wounds and always wash your hands thoroughly afterwards.

First up, we're going to investigate water clarity. To do so, you'll need one of these. This is an Opalometer. It's a small disk of card with several circles of varying shades of grey around the outside. You'll need to tape a 1p coin to the back of this disc, and then drop it to the bottom of the 2 litre bottle. Once you've done this, you'll need to fill the bottle with water from the pond.

Once the bottle is full, you'll be able to look down the top and count the number of discs you can see through the water. The more discs you can see, the clearer the water is. Please also remember to check the colour of the water at this point.

If the water is clear, it allows plenty of light through, meaning plants in the pond can photosynthesise. Photosynthesis allows plants to produce oxygen from carbon dioxide, and the more oxygen that's in the water, the more animals will be able to live there.

So, in this pond, I can see 12 of the grey discs at the bottom here on the Opalometer. This means this pond is nice and clear. As you can see, there's plenty of plants, and that probably means there's also plenty of animals in there too, so this pond is looking nice and healthy.

Next up, we're going to investigate the pH of the pond. If the pH of the pond is too high or low, the organisms living in it will die. The ideal range is somewhere between 6.5 and 9, with neutral being 7. Rainwater, surrounding rocks and pollution can affect the pH of the water. Rainwater is slightly acidic; however this will change as it drains through the ground into the pond. Another thing that can affect pH is photosynthesis in the pond. As plants photosynthesise, they draw carbon dioxide out of the water. This raises the pH of the pond, making it less acidic.

pH can also be effected by rain. Naturally, rainwater is just slightly acidic, however the acidity of the water changes as it moves through the ground, so we'll investigate the acidity of this water in the pond behind us.

To do so, you'll need a pH strip like this. The centre of the pH strip is our indicator strip; this doesn't have a number on it. This will change colour based on the acidity of the water. You'll need to take samples of water from the pond: take around about ten samples to make sure you are getting a fair representation of the pH of the overall pond. Also remember to rinse out your sampling equipment in between use, so that you're not contaminating each sample.

To test the pH, hold the strip by the arrow at the top, dip it into the water for around about 3 seconds making sure you are getting the indicator strip wet, and then remove it. Wait for the colour to develop for around about 2 minutes to get the proper pH reading.

The strip in the middle will change colour to match one of the other colour strips on the pH strip. Anything more yellow is acid, and anything more blue is alkali. This one's nice and green, meaning the water in the pond is neutral, which is good news for the animals and plants living in there.

If your pond water is too cloudy, or the acidity is too high or low, this is bad news for the environment and the animals and plants living in the pond. If you want to improve your local pond, advice can be found on how to do so on the OPAL website.