

Microplastics Science Experiment - Instructions

In this experiment students will be testing whether they can identify microplastics in the water they drink. Try to collect a range of water from different sources, such as from the taps at school, from taps at home, bottled water and filtered water. If you also have access to sea water or water from a local creek or river you could also use these.

TIP: Microplastics can come from synthetic fabrics, including polar fleece. Because you are looking for microplastics, it is recommended you wear clothing made of cotton, such as cotton t-shirts or lab coats.

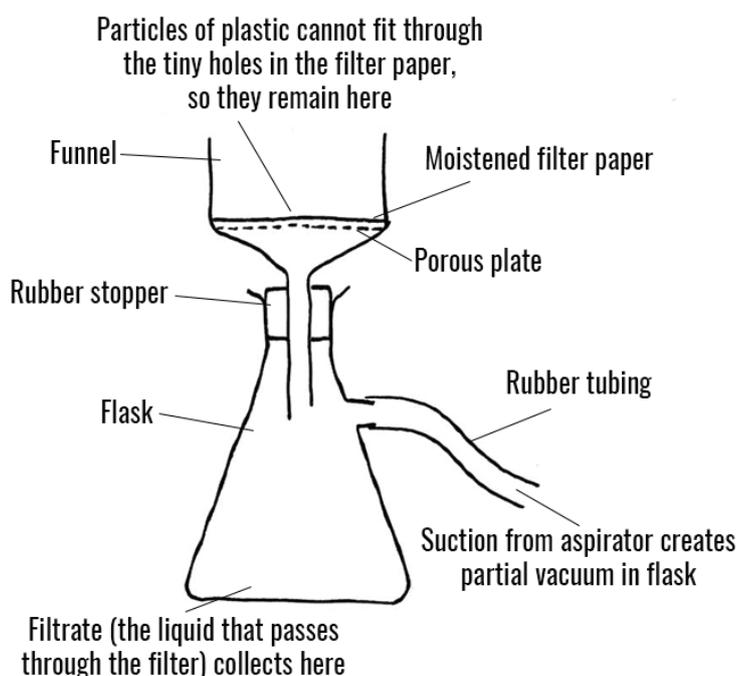
Equipment needed:

- Vacuum filter set (see right)
- Filtered water
- Filter paper
- Petri dishes (one for each type of water you're testing)
- Tweezers
- Paper and pen
- Microscope
- Different types of water - try to collect a range of water from different sources, making sure you have the same amount of each sample.

Procedure:

For each type of water you are testing, follow these steps -

1. Clean the funnel with filtered water.
2. Ensure your filter paper is carefully placed in the funnel and ensure your funnel is connected to the beaker/flask.
3. Pour the water you are testing into the funnel. Use the vacuum to help pull the water through the filter paper. TIP: You could partially cover the top opening of the funnel with a lid - such as a petri dish lid - to improve the suction; however, make sure the opening isn't completely covered as this will create a seal and the water won't be drawn through the paper.
4. Keep an eye on the water being drawn into the beaker/flask and make sure it never goes high enough to enter the vacuum tube. You may need to tip some of the water from the beaker away.
5. Once you have passed all the water from your sample through the filter paper, carefully remove the filter and place it in a petri dish. Add a label to identify the water your sample comes from, and place a lid on the petri dish.
6. Now you can begin analysing your samples with your microscope. Instructions for using a microscope are available on the next page.



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Preparing your microscope slide:

- Use a pipette to place a drop of your water sample in the middle of the slide.
- Take a coverslip and place one side of the coverslip at an angle so that its edge touches the slide and the outer edge of the drop.
- Slowly lower the coverslip over the sample, taking care to avoid air bubbles.

How to use a microscope:

1. Place your microscope on a tabletop where you will have plenty of room to work.
2. Ensure your microscope slide has a coverslip or cover glass over the sample you want to study. This helps to protect the objective lens (the lens that goes up and down when you turn the focus knob) if they accidentally touch the slide.
3. Place the microscope slide on the stage and secure it in place with the clips.
4. Look at the objective lens and the stage from the side and turn the coarse focus knob so that the objective lens moves downward. Alternatively, if your stage moves, adjust it so it goes upwards. Try to move the lens and slide as close together as possible but so they're not touching.
5. Now, look through the eyepiece and adjust the illuminator (or mirror) and diaphragm for the greatest amount of light. If you have a light on your microscope, switch it on.
6. Slowly turn the coarse focus knob so that the objective lens goes up (away from the slide), continuing until the image on your slide comes into focus. If you have a fine adjustment knob you can then use this for fine focusing. If your microscope has a moving stage, adjust the coarse knob so the stage moves downward or away from the objective lens.
7. As you look through the eyepiece, carefully move the microscope slide around so that the image on your slide is in the centre of your field of view. To get the clearest image you can, carefully adjust the mirror, illuminator or diaphragm.
8. When you are satisfied with the image of your sample using the lowest power objective, you can then change to the next objective lenses. To get a clear image with a new lens you may need to adjust the sample into focus and/or readjust the condenser and light intensity. If you cannot focus on your specimen, repeat steps 4 to 6 with the higher power objective lens in place.
9. When you're finished studying your sample/s, lower the stage, click the low power lens into position and remove the slide.

Other tips for working with a microscope:

- Always carry your microscope with two hands by grasping the arm in one hand and using the other hand to support the base.
- Do not touch the glass part of the lenses with your fingers - smudges on the lens interfere with your viewing! If you do have a dirty or smudged lens, use special lens paper to clean it.
- Dust is not a friend of the microscope so always keep your microscope covered when not in use.
- When using a monocular microscope (microscope with one eyepiece) try to look through the eyepiece with one eye and keep the other eye open. This will help avoid eye strain. completely covered as this will create a seal and the water won't be drawn through the paper.