

How does using electricity affect our environment?



Age Range: Primary and Lower Secondary

Experiment to do from home.

What will we learn from this activity - this will teach you about living things and their habitats and help you to recognise that environments can change, which sometimes pose dangers to living things.

Explore your understanding about how gases are produced by coal fuelled power stations, transport and household fires. If fuels are not burned efficiently then particles of soot (carbon) enter the air around us which can irritate our lungs and impact on plants and animals, e.g. lichen. We cannot easily see the particles. There is a trade-off between making electricity using these methods and looking after the environment. Humans are responsible for causing much of this pollution so we have a responsibility to learn about the effects and to try to mitigate them.

Step by step guide

In this activity we're going to investigate the air pollution around where you are, conducting the experiment.

1. **Watch** the video of Jules telling the story.
2. With an adult **make** your own soot (particulate matter) traps using Vaseline, paper, plastic wallet (See video) Let an adult help to **demonstrate** using a tealight how burning wax (the fuel) creates soot.
3. How to - Place a glass jar/drinking glass over the tealight flame (6 inches above). Lower it until the glass is touching the flame. As the sides of the tealight's metal container and the glass begin to restrict the amount of oxygen reaching the flame, it will be less efficient at burning. Soot particles will start to deposit on the base of the glass. (You may also notice the flame is more orange in colour as it burns less efficiently.)
4. **Think** about -
 - How large the traps should be
 - How long to leave the traps out
 - Where do expect to find most pollution
 - Where will you place the traps
 - What will you count when you collect the traps – e.g. most vs least or particles per cm squared
 - How could you use the information you collect – e.g. promote a walk to school week to lower pollution around the school gates
 - Will the weather forecast affect your investigation
5. You can **explore** how air pollution varies in different parts of the country and in other countries using <https://uk-air.defra.gov.uk/data/gis-mapping/>

Equipment

Matches, glass jar or drinking glass, tealight candle; A4 plastic wallets, paper, Vaseline, string / pegs to affix particle traps, scissors, sticky tape

Don't forget the importance of Health & Safety! This experiment MUST be carried out with an adult.



Watch the story video:

<https://youtu.be/acJ62tHpV7s>



Watch a lesson to investigate air pollution

<https://youtu.be/Ne2HSJ9>

[GWYg](#)

Questions to think about for age 4 - 7

How many particles can you see?

Where do you think the air is cleanest/dirtiest?

What makes you cough?

Questions to think about for age 7 - 14

Where does our electricity come from?

What is a lichen? Can you find out?

Why are lichens so sensitive to air pollution?

Links

<https://www.nhm.ac.uk/discover/nature-and-pollution-what-lichens-tell-us-about-toxic-air.html>

<https://www.eea.europa.eu/themes/air/intro>

Doffa's Reindeer book will be available soon through artfulfoxcreatives.com



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