10 air quality experiments and activities for home and school

Air quality experiments and activities are for children/ young peole to undertake with their parents or under supervision from a responsible adult.

Hello!

Firstly, the Clean Air Crew (Clean Air Clive and Danni (Air Quality Education Officer)) wanted to say thank you to all of you who are continuing to teach, going into school or setting work at home. It's imperative that children and young people continue to learn, so here are 10 air quality experiments and activities, for you to teach at home or school.

All activities and resources have been found online, or are our own creations, so if you have an internet connection, you can download and use them. The best bit – they are all **FREE**!

Activities have been grouped under their appropriate key stage (KS). Some activities are cross-key stage, so feel free to use them as you see fit.

Each activity or lesson has been chosen to cover a different aspect of the Leicester City Council's Air Quality Education programme. These include:

- Identifying air pollution sources
- Discovering the impact of poor air quality to health and the environment; and
- Taking action to improve air quality.

This **PDF document** will be available on the Air Quality Education Resources page, on Schools Extranet. On this page you'll find more air quality lessons and classroom activities, created in-house, for you to use in your lesson planning.

It would be great to have your feedback, please email air-quality-education@leicester.gov.uk with your thoughts.

KS1/2

Activity description	Link	What will you need?
What's up there besides air? **Make a DIY pollution catcher** An experiment to make a Tetra Pak carton air pollution catcher. An opportunity to take a closer look at what is floating around in the air. You could make one to set up now (while the roads are quieter) and one for another time (when the roads are busier), to see if there is a difference.	https://www3.epa.gov/airnow/flag/Whats-Up-There-Besides-Air.pdf **Source:** United States Environmental Protection Agency, Air Now, Air Quality Flag Programme Free PDF Download	• Tetra Pak carton for each team / individual child • Double-sided tape • Permanent marker • Directional compass – or estimate using the rise and fall of the sun • Magnifying glass (optional) • Coloured pencils, felt tips, or crayons
Pollution jars **Introduction to different types of pollution: air, sea, land** A useful introduction to pollution and thinking about the differences between polluted and unpolluted environments. Once complete, the jars stand as a useful reminder and can be used as props to assist with other pollution-based environmental activities and assemblies. **Please note that close adult supervision is required here**.	https://www.plt.org/educator-tips/science-projects-pollution/ (when on website, scroll down to number five) https://www.naturalbeachliving.com/teaching-kids-about-pollution **Sources:** Project Learning Tree and Natural beach living blog	• Eight jars • Water • Matches • Plastic wrappers or small pieces of plastic waste • Soil • Popcorn (represents dirty snow) • Unpolluted snow (to make snow dough: baking powder and water) • Moss for the earth or grass (this could be a photo) • Polluted land: add plastic to soil, moss, small plants, or grass
Lung art: What a wheeze! Take a deep breath and make a drawing to represent the human lungs, using ink or paint. This activity is a useful conversation starter, to make the link between the importance of breathing and what is in our air.	https://www.healthyair.org.uk/documents/2013/02/healthy-air-education-pack-2012.pdf/ **Source:** Healthy Air Education Pack, Environmental Protection UK for the Healthy Air campaign, page 10 of pack Free PDF download	• Paint / ink • One straw • Sheets of paper (the bigger the better)

KS2

Activity description	Link	What will you need?
Smog in a jar What does smog / polluted air look like? This experiment is a quick and easy way to find out. **Please note that close adult supervision is required here**.	https://www.youtube.com/watch?v=RoAjQA6KJSA **Source:** Anna Jackson, Science experiments for kids, YouTube channel	• Scissors • Sheet of paper • Lighter / matches • Jar • Foil • Ice cubes
Create acid rain in your kitchen Acid rain is caused by air pollution. When clean rain water falls through polluted air, the rainwater becomes polluted. It becomes acidic. This experiment will demonstrate the impact of air pollution on our environment, especially plants and trees.	https://www.kidsecologycorps.org/kid-power/activities/create-acid-rain-in-your-own-kitchen **Source:** Kids Ecology Corps	• Six short strips of masking tape (labels) • Pen or permanent marker • Three jars with lids • Measuring cups • A bottle of vinegar or lemon juice • Tap water • Three small potted plants
Introduction to air quality A quick and easily differentiated workshop that explores what air pollution is, where it comes from and what can be done about it. Limited resources are required, and if you don't have a printer, you could ask children to copy or draw from the screen.	https://schools.leicester.gov.uk/services/environment-health-and-well-being/air-quality-education/air-quality-education-resources/ **Source:** Leicester City Council Free word / PDF download	• Printed resources (download from Air Quality Education web page) – air pollution 'cause labels' and 'cause cards' • Scissors • Glue • Large sheets of paper • Pens / pencils

KS2/3

Activity description	Link	What will you need?
Air pollution outdoor simulation activities Practical activities that explore how air pollution can effect lung capacity. **Simulation 1 (outdoor):** This activity involves pupils in a physical simulation of particulates impacting our lungs when we breathe in polluted air. **Simulation 2 (indoor):** Experience what it feels like to try and breathe with reduced lung capacity.	https://cdn.friendsoftheearth.uk/sites/default/files/downloads/Clean%20Air%20Schools%20Pack_web%20version%202018.pdf **Source:** Friends of the Earth Lesson 2, Simulation 1 (outdoors) page 13 and Simulation 2 (indoors) page 14 Free PDF download	**Outdoor simulation:** • An open space: hall, playground, garden, field • Chalk • Cones (or anything around the house you can use as markers, such as drinks botles or food tubs) • Tape mesaure • Some volunteers • Different coloured bibs or bands to represent O_2 and particulates. **Indoor simulation:** one straw per person
Whirling swirling air pollution There are numerous ways that everyday human activities can contribute to air pollution. These activities may not be immediately apparent as a source of pollution. However, the cumulative effect can be profound. This activity attempts to simulate the cumulative effect of various air pollution sources upon the air shed. An air shed is part of the atmosphere that behaves in a coherent way with respect to the dispersion of emissions.	https://www3.epa.gov/airnow/flag/Whirling-Swirling-Air-Pollution.pdf **Source:** United States Environmental Protection Agency, Air Now, Air Quality Flag Programme Free PDF Download	• Water • Clear plastic cups • Food colouring (x4 different colours) Props can be used to support this activity. Here are some suggestions: • Small plastic car • Fast food containers • Shower and hair products • Electric hair dryer • Perfumes / body spray • Bug spray / home cleaning spray

KS3/4

Activity description	Link	What will you need?
Air pollutants and their impact: where does air pollution come from? A lesson plan that explores the many air pollutants, their multiple sources and their impact locally, nationally and internationally.	https://schools.leicester.gov.uk/services/environment-health-and-well-being/air-quality-education/air-quality-education-resources/ **Source:** Leicester City Council, Schools Extranet, Air quality education resource pack	• Lesson plan for guidance • PowerPoint presentation • Factsheets • Summary table to complete (complete online or print off)
Why buy an electric vehicle? A lesson introducing electric vehicles (focusing on electric cars). Get to grips with the basics of electric cars and their performance ratings, compare statistics of different vehicles and decide which car you would choose to purchase.	https://schools.leicester.gov.uk/services/environment-health-and-well-being/air-quality-education/air-quality-education-resources/ **Source:** Leicester City Council, Schools Extranet, Air quality education resource pack	• Lesson plan for guidance • PowerPoint presentation • Research table – comparing vehicles, list of ULEV vehicles or printed vehicle brochures and up to date price list

Campaign activity – suitable for all key stages

Activity description	Link	What will you need?
Make your own air pollution campaign This activity is a great round-up and will leave you with a legacy for tackling poor air quality in the future. You will identify causes of air pollution in your local area, think through practical steps to improve air quality and create your own unique suite of communication tools to tell the world about air pollution in a persuasive way.	https://cdn.friendsoftheearth.uk/sites/default/files/downloads/Clean%20Air%20Schools%20Pack_web%20version%202018.pdf **Source:** Friends of the Earth, Lesson 3, page 17 onwards Free PDF Download	• Tablet / computer • Camera / smart phone (only from a responsible adult) • Paper • Pens • Glue stick • Scissors

Activity description	Link	What will you need?
Tools can vary and include your own ideas too: • A persuasive letter to local government or parents • Poster campaign • Internet meme • Song, play or sketch for an assembly, social media video • Social media campaign • Window stickers	Supporting campaign examples can also be found on the LCC Schools Extranet website. Switch off your engine for cleaner air (anti-idling campaign): https://schools.leicester.gov.uk/services/environment-health-and-well-being/air-quality-education/switch-off-your-engine-campaign/	