



BLACKBURN
with
DARWEN
BOROUGH COUNCIL

Clean Air Toolkit for schools



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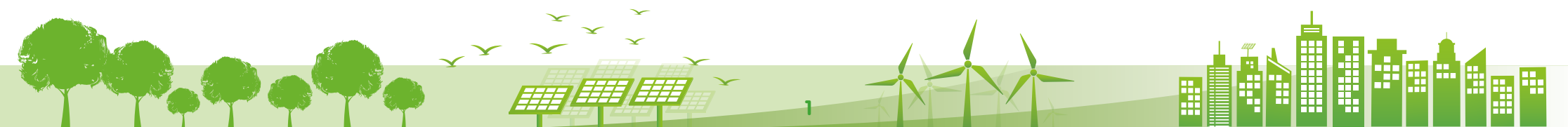
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Introduction

In the UK, between 28,000 and 36,000 people die every year from man-made air pollution and more are admitted to hospital. It is the largest environmental risk to public health.

Blackburn with Darwen Council have created this Air Quality Toolkit for Schools to provide all the necessary information for schools across the borough to reduce their air pollution and create campaigns to encourage others to reduce theirs. This toolkit is aimed at KS2 and is flexible to use.

This toolkit can also begin the conversation of the transition from primary school to secondary school and what transportation, if any, students will use.



What Blackburn with Darwen is doing

Through [Blackburn with Darwen's Safer Roads Strategy](#), the council aims to deliver safer and healthier roads across the borough. Whilst the primary focus of the strategy is to reduce casualties, increasing walking and cycling rates and improving air quality are secondary aims.

Blackburn with Darwen has 4 Air Quality Management Areas that do not meet targets for national air quality. Only 57% of residents walk or cycle once a week which is lower than the national average. Across the borough, school streets and active trails are being introduced, to encourage walking and cycling to school. Around schools, the council aims to improve the knowledge of air pollution and air quality within schools and monitor the quality around these areas.

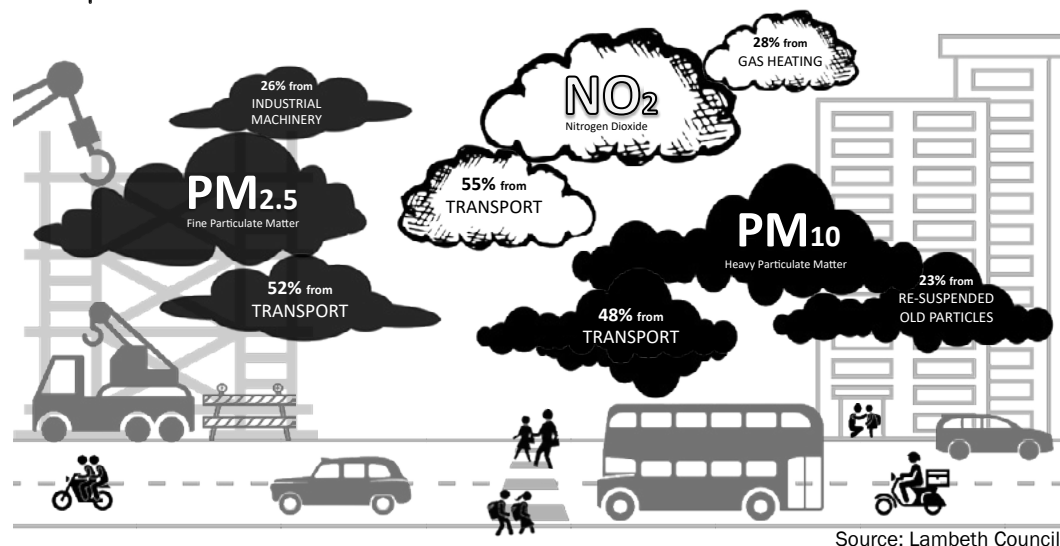
Blackburn with Darwen have also launched a [Climate Emergency Action Plan](#) to help reduce emissions across the borough. Actions include encouraging active travel, improving public transport and working with local taxi drivers to cut their emissions.



What is air pollution?

Whilst invisible, air pollution is a serious issue for our health and the environment. Air pollution is mostly made up of nitrogen dioxide (NO₂), fine particulate matter (PM_{2.5}) and heavy particulate matter (PM₁₀). Other pollutants include sulphur dioxide (SO₂), carbon monoxide (CO) and ozone (O₃). Man-made sources of air pollution are, transport, industrial machinery and burning fossil fuels, such as coal and gas. Some natural sources, such as volcanic explosions and decay can also contribute to air pollution.

Air pollution is a *SILENT* and *INVISIBLE* killer....



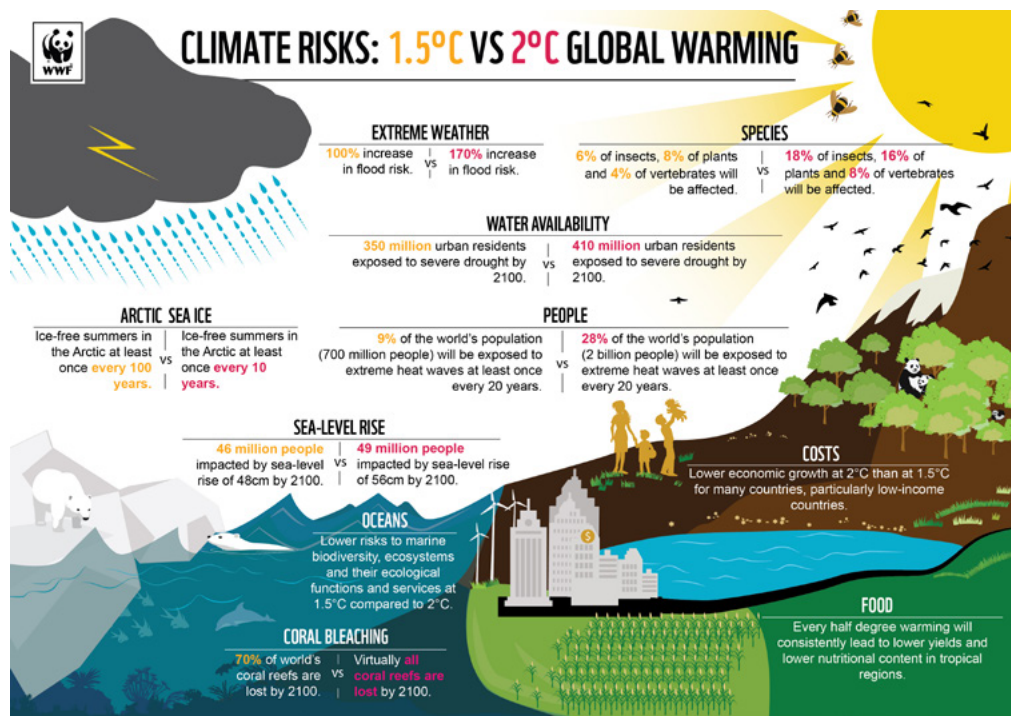
Source: Lambeth Council

It is important to understand that air pollution can also be found indoors. Appliances such as heaters, ovens and fires can release CO, NO₂ and particulates, especially if they burn wood, coal or gas. Cleaning products release volatile organic compounds and if people choose to smoke inside, tobacco smoke can accumulate inside. The National Institute for Health and Care Excellence (NICE) has guidelines on how to reduce air pollution both indoors and outdoors and highlights these recommendations on an interactive flow chart [Overview](#) | [Indoor air quality at home](#) | [Guidance](#) | [NICE](#).

Climate Change and Air Quality

Climate change is causing more extreme weather events across the globe and it is mainly caused by the greenhouse gases (mostly CO₂) released from fossil fuels when they are burnt. Air pollution and climate change are closely linked. When the temperature rises, air pollution worsens.

During heatwaves the air is stationary so air pollution builds up as it cannot be moved away. Also, the chemicals that make up air pollution begin to 'cook' which can create smog, the type of air pollution you can see (you can create smog in the classroom experiments below). This means that air quality is reduced, which impacts on our health. Air pollutants, like those from transport, directly impact global warming as they prevent heat from escaping the atmosphere.

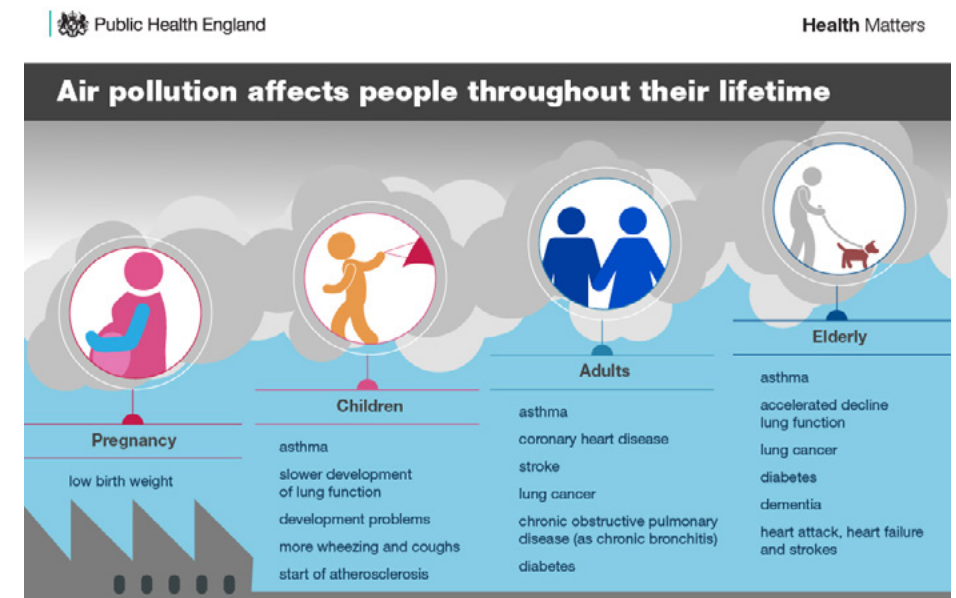


Impact on health

Air pollution is invisible and when we breathe in, the pollutants in the air move down our airway and into our lungs. This can cause coughing, sneezing and watery eyes when pollution levels are high. If people are exposed to high levels of pollution constantly, it can have a serious impact on health, especially for young children and people with underlying health conditions.

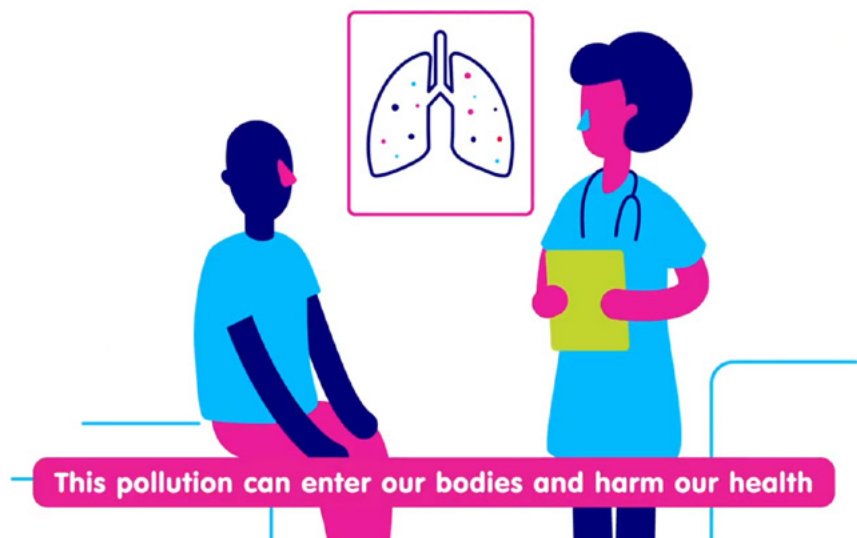
As children are still developing and are less resilient, pollutants in the air can cause asthma and can affect growth. As they grow up, lung conditions can be exacerbated and lead to lung and heart disease. However, it is important to know that there is no safe level of air pollution and even low levels can impact on everyone's health. PM_{2.5} is so fine that it can get into the blood stream, move around our body and be found in our organs.

[Air Quality - A guide for directors of public health \(defra.gov.uk\)](https://www.defra.gov.uk/air-quality/guidance/)



What can you do to reduce air pollution?

The Clean Air Hub by Global Action Plan, has a simple video explaining what we can do to reduce outdoor air pollution and keep ourselves safe. Watch the video: [What can we do to cut outdoor air pollution and keep ourselves safe?](#) - YouTube.



On the following pages are some examples of specific campaigns that are running nationally and locally throughout the year that you can get involved with to help reduce air pollution.

Active Travel

Walking or cycling to school is a great way to reduce emissions and become more active. Living Streets promote walking to school both in primary and secondary schools. Walking to school is important because it reduces congestion on the road and makes the air cleaner by reducing CO2 emissions. Walking to school is a form of exercise and children will arrive at school refreshed and ready to learn. Walk to School Week is 16th-20th May 2022, but active travel can be done throughout the school year! Visit their website for more information on the event and other campaigns they run [Living Streets | Home Page | Living Streets](#).

Cycling saves carbon emissions and is cheaper than a car! It also reduces congestion and keeps you fit and healthy. Bikeability is an organisation that gives children the skills and confidence to cycle on our roads. By 2025, Bikeability will have helped 5 million children to ride a bike which means 5 million children are helping to tackle climate change. For more information or to find your nearest Bikeability, please visit their website [Bikeability | Cycle training for everyone delivering better and safer training](#).



Eat Well Move More Strategy

Blackburn with Darwen Council have launched their [Eat Well Move More Strategy](#) to encourage people to be active and eat healthier. The strategy states that disadvantaged areas tend to have poorer air quality and more traffic which can discourage walking and cycling.

During the COVID-19 pandemic, an active travel partnership was created to develop a Stride and Ride group, which has gone on to produce the borough's [Walking and Cycling Plan](#). More information on how you can lead an active life, the services the council provides and what the borough is doing to tackle Climate Change can be found at www.bewellbwd.com



Idling Campaign

Transport is the main contributor to air pollution. Air pollution is worse in areas where there is a lot of traffic, such as on busy roads. Around schools, car idling contributes to air pollution. This is when the car is stationary but the engine is left on and still producing emissions and it is illegal under the Road Vehicle Regulations (1986). Air quality is part of Blackburn with Darwen Borough Council's Safer Roads strategy and competition was launched in schools to reduce idling. The campaigns focused on getting parents to turn off their engines when waiting in a car to improve air quality. You can still create your own idling campaign by using posters, leaflets, banners and pledges for parents to sign to turn off their engines.



[See the video here Don't leave your engine idling. - YouTube](#)

Muhammad, a school boy in Blackburn is tackling idling himself by knocking on car windows and asking people to turn their engines off when they are stationary. As Muhammad has asthma, he knows how emissions can impact on health and the environment. He has created a video with Councillor Phil Riley which you can view below. The full article is available to read here [The Shuttle: Blackburn with Darwen Council News](#).

Clean Air Day

Clean Air Day is the UK's largest air pollution campaign and in 2021, created 2.7 billion opportunities to see messages about air pollution. As this day is about pollution, people can choose to walk or cycle on short journeys or take less polluted routes. Schools can create campaigns advertising Clean Air Day, increase awareness and promote ways to reduce levels of air pollution.

Clean Air Day happens each year, so we encourage you to check the date and plan an activity annually. More information about how you can get involved is on their website. [Clean Air Day | Action for Clean Air](#).



A framework is available through Transform Our World here: [Clean Air for Schools Framework \(transform-our-world.org\)](#) This helps you to create a tailored action plan for your school to reduce air pollution. It is free to use and can help you to become a local leader in air pollution. In addition to the action plan, a wide variety of lesson plans across all key stage areas are available.

School Streets

A School Street is the area or road outside of a school with temporary restrictions on traffic and drop-off and pick-up time during the school day. During this time, only pedestrians and cyclists are able to access this road. This aims to encourage active travel, reduce road danger for children at school times and make the air cleaner.

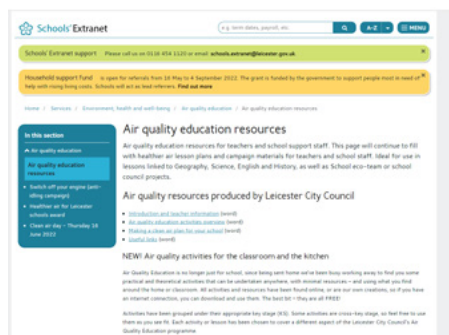
School Streets Initiative provides information, guidance and resources to begin the process of creating a school street from community conversations to building a case for the local authority. All the information can be accessed here [School Streets Initiative - All the information you need](#).



For local information about the School Streets Initiative contact:
Simon Littler: simon.littler@blackburn.gov.uk

Lesson Plans

We have included two lessons plans below which link in to the information highlighted in this tool kit. We have also included starter activities and three simple experiments to demonstrate air pollution and the impact on health. Please personalise and tailor this information to your pupils and link this to other parts of the curriculum.



Healthier Air for Leicester has created a lesson for Air pollution, living things and the environment available here: [School's Extranet \(leicester.gov.uk\)](https://www.leicester.gov.uk/schools-extranet/). The resources include a presentation, lesson plan, air pollution cause cards and how air quality can be improved at school. This link also has resources for further lessons on fossil fuels, air pollution: past and present.

The aim of the lesson plan aligns with the tool kit; to explain what air pollution is, the impact it has on health and what we can do to reduce it.

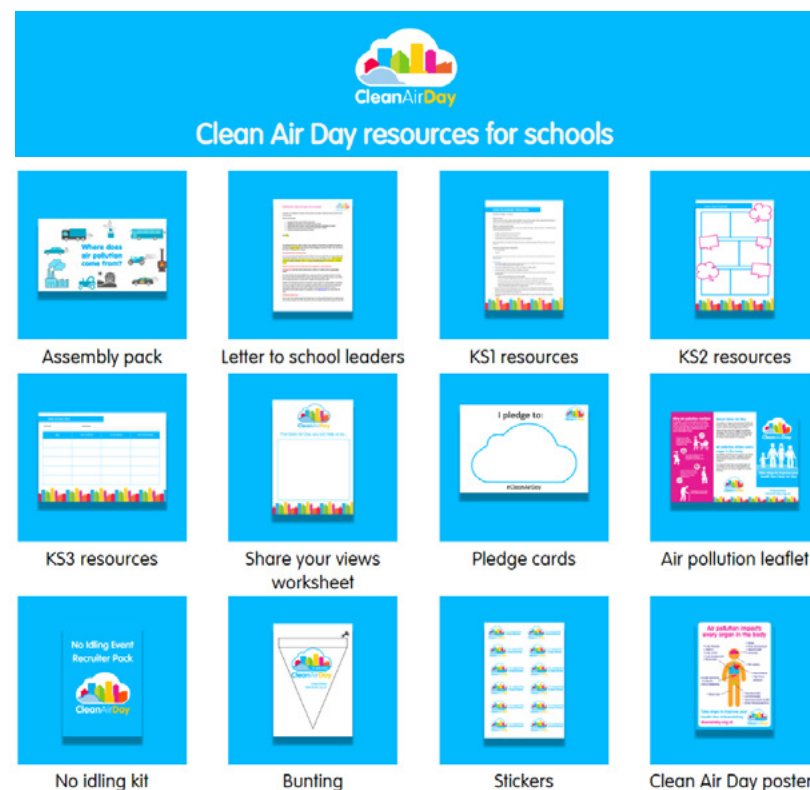
The key objectives for this toolkit and lesson are:

- Being able to describe what air pollution is and name some of its sources
- Describe how air pollution also has an impact on climate change and global warming
- Write and suggest how air pollution impacts health
- Make ideas and suggestions on how to reduce air pollution both at school and in the community linking with key campaigns

Lesson Plans

Global Action Plan who organise Clean Air Day have their own resources linking to air pollution and making the air cleaner and are available free to download here: [Free school resources for Clean Air Day](https://www.cleanairday.org.uk/resources-for-schools/). The resources include a simple presentation, lesson plan, comic strip template and data collection form. This lesson has links to geographical fieldwork by identifying sources of pollution around your school. Pupils then have the opportunity to display this data scientifically.

The aim of the lesson plan aligns with the tool kit; to explain what air pollution is, where it comes from, the impact it has on health and how air can be kept clean.



Starter Activities

True or False

Try taking this true or false quiz before and after your lesson on air pollution to see if your knowledge has improved!

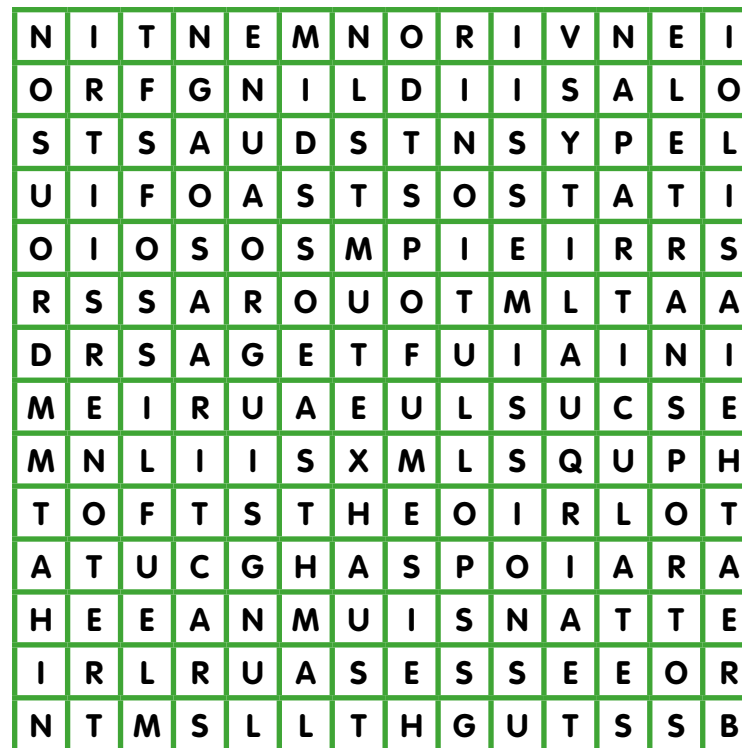
- A - You can always see air pollution
- B - Sitting in your car protects you from car fumes outside
- C - Transport is the biggest contributor to air pollution
- D - Air pollution can cause lung and heart disease
- E - There is a safe level of air pollution
- F - Walking and cycling can help to reduce emissions

You can find the answers on the back page of this booklet

Word search

To help you become familiar with some of the terms used in the air pollution lesson, try and find as many words as you can relating to air pollution in the word search below.

Air Pollution



FOSSIL FUEL	IDLING	TRANSPORT
EMISSIONS	LUNGS	SMOG
EXHAUST	PARTICULATES	AIR QUALITY
ENVIRONMENT	ASTHMA	BREATHE
FUMES	POLLUTION	CARS

Classroom Experiments

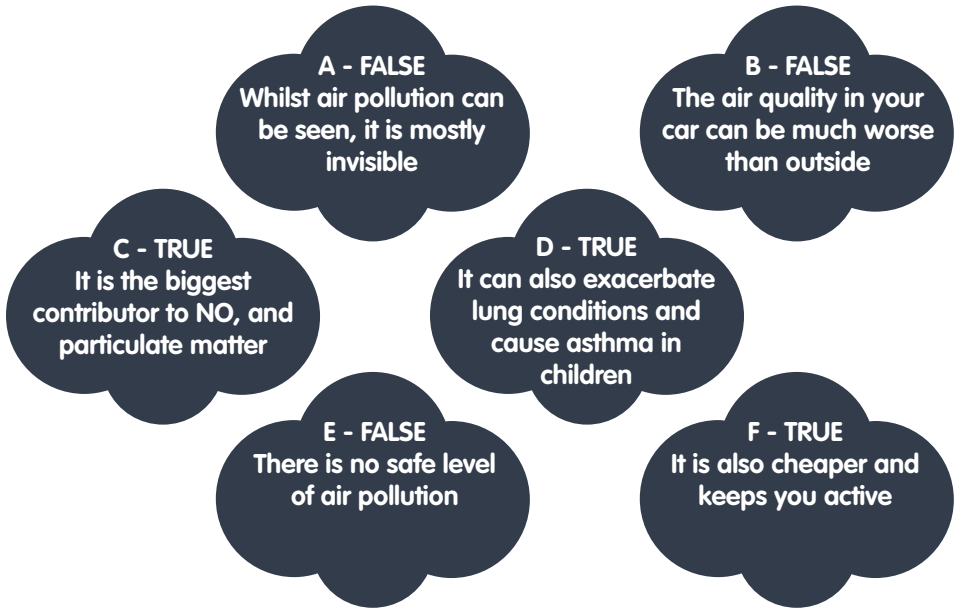
The experiments listed below can be done at home and at school and demonstrate that we breathe in what is in the air and how it can affect our lungs. The first activity, smog in a jar, will need very close supervision as a naked flame is required.

Activity 1 - Smog in a jar	What you need
<p>CLOSE SUPERVISION IS NEEDED/ TO BE CONDUCTED BY THE TEACHER</p> <ul style="list-style-type: none"> This is an example of how air pollution can sometimes be seen. Smog is harmful to animals and humans and it doesn't smell nice! In a jar, place some water droplets on the inside Place the ice cubes onto the foil to make it cold Light the paper on fire and place carefully into the jar Quickly put the foil lid, with the ice still on top onto the jar. Smog is caused by heat and water, CO₂ and pollution, this is what forms in the jar Watch the tutorial here Make Smog in a Jar - EASY SCIENCE EXPERIMENT - YouTube 	<ul style="list-style-type: none"> Scissors Sheet of paper Lighter / matches Jar Foil (made into a lid shape) Ice cubes

Classroom Experiments

Activity 2 - Impact on Breathing	What you need
<ul style="list-style-type: none"> Draw/mark out a 2x2m square with chalk or cones which will act as the lungs Have 'the body' stand in a circle holding hands away from the lungs Let each oxygen molecules run through the lungs and weave in and out of the body After this, have a pollution molecule run through the lungs with an oxygen molecule but the pollution will stay in the lungs As each oxygen goes through with pollution, it gets harder for them to run through the lung square This is a demonstration of how pollution makes it harder to breathe. 	<ul style="list-style-type: none"> One group of children in a circle acting as the body One group of children acting as oxygen molecules One group of children acting as air pollution Chalk/cones Large outdoor space

Activity 3 - Lung art	What you need
<ul style="list-style-type: none"> Use paint or ink to demonstrate breathing Place some paint on the paper, take a deep breath and blow through the straw to move the paint/ink. This can start a conversation around how air pollution can impact our lungs 	<ul style="list-style-type: none"> Paint/ink Straws Large paper



If you need any further information or want to share your air quality work or campaigns with us, please contact:
publichealthadmin@blackburn.gov.uk