#

KS2 Effects of air pollution on living things and their habitats

# National Curriculum links

**Science
Living things:** Recognise that environments can change and that this can sometimes pose dangers to living things.
**Working scientifically:** Identifying differences, similarities or changes related to simple scientific ideas and processes.
**Geography
Place knowledge:** understand geographical similarities and differences through the study of human and physical geography of a region of the United Kingdom…
**Human and physical geography:** describe and understand key aspects…

# Lesson AimTo explain what air pollution is, where it comes from and explore how it can be reduced in and around the school grounds.

# Lesson objectives

Pupils will:

* Be able to describe what air quality is
* Uncover different sources of air pollutants and identify their origin, through creating a poster of man-made and naturally occurring air pollutants
* Write about and suggest what some of the causes, effects and solutions to air pollution are
* Make a Clean Air Code with realistic ideas and suggestions to help improve air quality in and around the school grounds.

# Key vocabulary

Air quality, air pollution, man-made, natural, exhaust, fossil fuel, transport, diesel, pollutants, campaign, initiative, anti-idling, idling, recycling, active travel

# Resources required

* What is Air Quality? Introductory workshop power point
* 12 air pollution cause cards – enough packs for 5-6 groups per class
* Labels pack for cause cards – enough packs for 5-6 groups per class
* Large sheets of A3 paper or sugar paper
* Air pollution worksheet (causes, effects and solutions) – enough for one per child
* ‘How can we improve air quality in our school’ list of solutions
* Felt tip pens and pencils
* Glue sticks and scissors
* A4 sheets of paper

# Introduction

This session will give pupils a broad introduction to what air quality and air pollution is, where it comes from and what we can do to improve air quality. Pupils will be given the opportunity to take the lead and design or plan their own campaign or initiative to reduce air pollution in and around the school grounds.

# Group / Class activity

| Timings |  Activities | Notes / resources |
| --- | --- | --- |
| 5 minutes | **Slide 1-2:** **What is air quality?****Slide 1:**Ask the children if they are familiar with air quality, do they know what it is? Have they heard of it before? Explain that air quality is a measure of how clean the air is all around us. Ask children what might make air dirty? [smoke from cigarettes, smoke from houses, volcanic ash and dust, exhaust fumes etc] Explain that their answers are all types of air pollutant.**Slide 2:**Ask the children to look at the busy London street and identify where air pollution is coming from. Children may point out: cars, vans, buses, buildings, power stations, road works, traffic lights (?) etc. | Most air pollution of concern comes from diesel fuelled vehicle engines. However, air pollution can come from several sources and is made up of mostly: dust, gases, liquid droplets and solid particles (from soot and ash) |
| 5-10 minutes | **Slides 3-4:** **Where does air pollution come from?**Working in groups or pairs and work through the following activities:1. Identify and label each cause card – stick labels to each cause card
2. Sort cause cards into man made and naturally occurring sources. Great opportunity for topical discussions and debating in small groups whether some causes of pollution can be categorised under both headings
3. Create a poster displaying the sources of pollution and their manmade or natural origin.

Ask the children if they found anything surprising, tricky or difficult. Ask them to explain their findings to the rest of the class. | **Resources:*** Air pollution cause cards
* Air pollution cause labels
* Glue sticks
* Scissors
* Pens / pencils

Extra information about each source of air pollution can be found in the supporting notes document. |
| 10-15 minutes | **Slides 5-9: Effects of air pollution**Explain to the children that we will be taking a closer look at the effects of air pollution on our health and the environment. Tell the children that we will be watching a couple of short films that will look in the impact of air pollution on our health and the environment. Tell the children that they need to pay attention as they will need to remember as much about each of these videos as they can.**Impact to health:** * **Watch**: ‘London kids on air pollution: ‘Our eyes are stinging’
* **Discuss:** Ask the children what they can remember from the video and then talk through the following slide ‘Air pollution affects people throughout their lifetime’
* **Write:** Using the air pollution worksheet – write, draw or list as many health effects of air pollution as you can remember.

Questions to stimulate discussion:* In areas of high pollution, such as cities, how might air pollution make you feel?

(stinging eyes, cough, wheezing)* What kind of illnesses could air pollution make worse?

(asthma, lung infections, headaches)**Optional:** could discuss - air pollution’s effect on the most vulnerable - young children (lung development) and older people (lung related illnesses and heart conditions, strokes and dementia).**Impact to the environment:*** **Watch**: ‘Causes and effects of air pollution’ – ask the children to specifically look out for the environmental impacts
* **Discuss:** Ask the children what they can remember from the video and then use the following slide ‘environmental impacts’ as a re-cap or reminder about the environmental impacts
* **Write:** Using the air pollution worksheet – write, draw or list as many environmental impacts of air pollution as you can remember.
 | **Newsround clip** ‘London kids on air pollution: ‘Our eyes are stinging’**YouTube video**‘causes and effects of air pollution’**Air pollution worksheet** – enough copies for one per childImpact to the environment notes for teachers:* Global warming / climate change: caused by: excessive CO2 – causes: melting of icecaps and rising sea levels – loss of wildlife habitats, changes the type of animals and plants you will find in particular areas, changes to seasonal weather – winters harsher, summers warmer
* Acid rain – caused by: excess SO2 and NO2 in the atmosphere dissolves in rain water and causes acid rain. Causes: animals and plants living in rivers, waterways and oceans to die.
* Ozone depletion (ozone holes) – caused by: CFCs (chlorofluorocarbons) found in refrigerators, car air conditioning systems and aerosols.
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| minutes | **Slide 10: How can we improve air quality?Discussion:** 60 seconds - In pairs – come up with 2 or 3 ways that could improve air quality. Write ideas down on the whiteboard.As a class go through the list of options and discuss any more ideas that are thought of. Discuss the connections between switching lights off and recycling – using less electricity (made through burning fossil fuels) etc | **Resources:*** Board marker
* Whiteboard / large sheet of paper
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| 20-30 minutes | **Slides 11-12: How can we improve air quality in our school?****Slide 11:**We will now think more specifically how we can improve air quality at our school. Hand out aid available. NB. when thinking about improving air quality, we need to think realistically.Ask the children what I mean by realistic. Offer a simple definition if they get stuck1. Read suggestions through in your group – if there aren’t any that make sense use the glossary cards to help.
2. Circle or tick the suggestions that you think are achievable, realistic or both. Discuss in your group why you came to those conclusions.
3. Quick finishers: make a wish list of the solutions they would like to use, if they had more time, money, people and permission.

**Slide 12: Making a school Clean Air Code**Explain that we have looked at lots of ways to improve air quality at school. We have a wish list of the things we would like and a good idea of some solutions that everyone feels is realistic or achievable. We will now develop a clean air code – a bit like the eco-schools code of conduct – it’s a list of rules that everyone can follow to try and improve air quality at your school.In small groups, write a list of at least 5 golden rules that your school could follow (this should include the teachers, school staff, parents and pupils). This list should be made up of rules that are easily achievable and should encourage rather than scare.**Activity:** Make a poster to display your rules, a rap or a song. As a class the best ones could be chosen to form the school’s very own Clean Air Code. | **Resources:*** Sheets of A4 or A3 paper
* Large sheets of paper for posters (optional)
* Glue sticks
* Pens, pencils
* How can we improve air quality at our school hand out
* Glossary and definition picture cards
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