

**TEACHING  
RESOURCES**

**AIR  
POLLUTION  
HEALTH  
CRISIS**

**GREENPEACE**



# TEACHER'S PACK

## OVERVIEW

This pack includes lesson ideas and resources for Key Stage 2. It will help children to understand the key issues around air pollution in London and show how they can use their influence to help effect change for cleaner, safer air. The pack links to both Science and English in the 2014 National Curriculum. It can be used for a short, two-part lesson or to support a longer series of lessons.

## INTRODUCTION

London's air is toxic and illegal. Almost a quarter of school children in the capital are exposed to levels of air pollution so high that they break legal limits. Children are most vulnerable to poor air quality. From asthma to effects on mental and cognitive health – polluted air is bad for children. We know that early age exposure to air pollution can cause life long impacts, including reduced lung function, harm to the heart, brain, hormone and immune systems, and increased risk of lung cancer.

We want to make sure children's voices are heard. They should have safe, clean air to breathe and **they have a right to demand it.**

This pack will introduce children to the causes and effects of air pollution, inviting them to consider how it affects them in their lives and what solutions are available. Younger children can draw a poster to show their concerns, while older children can write a formal, persuasive letter to the Mayor of London, calling for action to protect them from air pollution.

All resources and a PowerPoint presentation are available to download at [www.greenpeace.org.uk/teach-pollution](http://www.greenpeace.org.uk/teach-pollution)

## THE ISSUES

- **9,416** Londoners die early every year because of air pollution.
- Air pollution costs London's economy **£3.7 BILLION** a year.
- **24%** of primary schools are in areas that breach the legal NO<sub>2</sub> limit.
- Londoners are twice as likely to die from lung diseases if they live in deprived vs affluent areas of the city.

## WHAT CAUSES AIR POLLUTION?

London's main air pollutants are nitrogen dioxide (NO<sub>2</sub>), particulates, ie soot (PM10 and PM2.5), ozone (O<sub>3</sub>) and sulfur dioxide (SO<sub>2</sub>).

These pollutants are caused largely by emissions from vehicles fuelled by petrol or diesel with diesel being the most polluting of the two.

## WHAT ARE THE EFFECTS OF AIR POLLUTION?

Asthma, lung cancer, heart disease, mental and cognitive health issues.

## WHAT CAN BE DONE?

The more people who walk and cycle, the cleaner our air will be. Electric cars run on batteries powered by renewable energy don't create air pollution. These cars are starting to come onto our streets. Ultimately, we need all our cars to be electric, but in the meantime, we need to start restricting and reducing the number of polluting vehicles on our roads.

The Mayor of London has begun a consultation on a number of important measures to start tackling London air pollution including:

- reducing the number of polluting vehicles in central London's congestion zone.
- making a new zone to cover a much larger area of London (up to the north and south circular) which would start to reduce the number of polluting vehicles in more areas where people live and go to school.
- buying only hybrid or zero emission double-decker buses from 2018.

Stats from Mayor of London <https://www.london.gov.uk/node/33528>



# LESSON IDEAS

These activities could be used as a double lesson or to support learning in a series of lessons. The presentation can be found at [www.greenpeace.org.uk/teach-pollution](http://www.greenpeace.org.uk/teach-pollution) and used to introduce the pupils to the topic of air pollution. It will give them the opportunity to discuss the causes, effects and solutions to the problem. The poster template can be used to consolidate children's learning about the causes and effects of air pollution, or for younger children to express their concerns. The writing frames can be used along with the fact sheets and persuasive writing posters to write a formal letter to the Mayor of London, explaining the causes of air pollution, how it affects them in their daily lives and what they would like the mayor to do to solve the problem.

## PRIOR LEARNING

Children should be familiar with writing a formal letter and using persuasive language.

## LINKS TO THE NATIONAL CURRICULUM 2014

### English

- **Years 5 and 6 programme of study:** Pupils should be taught to plan their writing by identifying the audience and purpose of the writing, selecting the appropriate form and using other similar writing as models for their own.
- **Years 3 and 4 programme of study:** Pupils should continue to have opportunities to write for a range of real purposes and audiences as part of their work across the curriculum.

### Science

- **Year 4 programme of study:**
  - Living things and their habitats:**  
Recognise that environments can change which can sometimes pose dangers to living things. Pupils should explore examples of human impact (both positive and negative) on environments.
  - States of matter:**  
Compare and group materials together, according to whether they are solids, liquids or gases.
- **Year 2 programme of study**
  - Animals including humans**  
Find out about and describe the basic needs of animals, including humans, for survival (water, food and air).

### LINKS

- London Sustainability Exchange's air pollution resource pack:  
[www.healthyair.org.uk/cleaner-air-4-schools-toolkit](http://www.healthyair.org.uk/cleaner-air-4-schools-toolkit)
- Environmental Protection UK's Healthy Air Campaign education pack:  
[www.healthyair.org.uk/documents/2013/02/healthy-air-education-pack-2012.pdf](http://www.healthyair.org.uk/documents/2013/02/healthy-air-education-pack-2012.pdf)
- I Like Clean Air – a London air pollution campaign group for children and parents:  
[www.ilikecleanair.org.uk](http://www.ilikecleanair.org.uk)
- Air pollution facts from the World Health Organisation:  
[www.who.int/mediacentre/factsheets/fs313/en](http://www.who.int/mediacentre/factsheets/fs313/en)



Lesson 1		Resources
<p><b>Learning Objective:</b></p> <p>To understand the issue of London's air pollution.</p> <p><b>Success Criteria:</b></p> <ul style="list-style-type: none"> <li>▪ I can say what the main causes are.</li> <li>▪ I can say what the effects on people are.</li> <li>▪ I can say what some of the solutions might be.</li> </ul>	<p><b>Starter:</b></p> <p>Display slide: <b>'Why do we need safe, clean air?'</b> Ask children to jog on the spot for one minute – set a timer. Ask them what they notice about their breathing. Why is it faster? Why is it important that the air we breath is clean?</p> <p><b>Main teaching:</b></p> <p>Display slide: <b>'How does our air get polluted?'</b> Ask children for suggestions and draw attention to the main source of pollution in London – vehicle emissions.</p> <p>Display slide: <b>'What is pollution?'</b> Introduce children to the names of the main harmful pollutants, their sources and their harmful effects.</p> <p>Show video: <b>'Day in the life of a child'</b>. Ask why children are affected by air pollution even more than adults (height, lungs still developing). How many London schools have illegal levels of pollution? (400).</p> <p><b>'How does air pollution affect me and my family?'</b> Ask the children if they or someone they know has asthma or other breathing problems. Is it more difficult to breathe on some days more than others? How do you think pollution affects this?</p> <p>Ask what they do and what others do that contributes to air pollution. What could we do differently?</p> <p>Display slide: <b>'What's the solution?'</b> Discuss how walking, cycling, zero-emission buses, and electric cars can help because they do not create dangerous emissions.</p> <p>Display slide <b>'Who can make this happen?'</b> Discuss how children and parents can decide to walk and cycle. Introduce Sadiq Khan – he is the mayor and has the power to change the buses and say which kinds of cars are allowed into our city.</p> <p>Ask who might be unhappy with some of these suggestions (e.g. drivers, owners of businesses). How could their concerns be addressed?</p> <p>And who would be helped?</p>	<p>Greenpeace Air Pollution presentation and video.</p>



Lesson 1 (cont...)		Resources
	<p><b>Activity:</b></p> <p>Role-play: In groups of three, children take turns to be the mayor. The other two must either convince the mayor to tackle air pollution, or to reject proposals to tackle air pollution.</p> <p>Or</p> <p>Hold a class debate on the Mayor's proposals for air pollution. The teacher, another member of staff, or a pupil could dress as the mayor (tie, rosette) and teams must either a) persuade the mayor to adopt the strongest possible measures to tackle air pollution, or b) to not adopt them.</p> <p><b>Plenary:</b></p> <p>Remind the children of the key points discussed. Tell them that they will be voting on whether or not to implement the solutions, but first they must write down their main reason on their whiteboards. Teacher asks all those in favour of implementing the solutions to show their whiteboards, then those against.</p>	<p>Ties Rosettes Mayoral chains (paper)</p> <p>Whiteboards and pens</p>





Lesson 2		Resources
<p><b>Learning Objective:</b></p> <p>To write a formal persuasive letter to the Mayor of London calling for strong action on air pollution.</p> <p><b>Success Criteria:</b> I can use a formal letter-writing style.</p> <p>I can use facts to inform the mayor of the causes and effects of air pollution.</p> <p>I can use persuasive language to encourage the mayor to implement the strongest solutions to air pollution.</p>	<p><b>Starter:</b></p> <p>Display slide: <b>Cause, effect or solution?</b> Word sort game. Children take it in turns to sort words or phrases into three columns on the interactive whiteboard.</p> <p><b>Main teaching:</b></p> <p>Use the 'Make Your Writing Persuasive' poster to remind children of the features of persuasive writing.</p> <p>Model the layout of writing a formal letter.</p> <p><b>Activity:</b></p> <p>Children write a formal letter to the Mayor of London, outlining the main causes and effects of air pollution, and persuading him to implement the strongest solutions.</p> <p>Some children could use the template "I need clean air because I like..." to draw a poster, showing the things they do in their lives that are affected by air pollution.</p> <p><b>Plenary:</b></p> <p>Share a selection of the best work with the class.</p>	<p>Greenpeace air pollution presentation.</p> <p>Greenpeace air pollution factsheet – one each or one between two.</p> <p>Writing frames: three options.</p> <p>Flipchart and marker pen.</p>

# AIR POLLUTION : THE FACTS

What are the causes and effects of air pollution? And how can we solve the problem?

## CAUSES:

- Cars powered by petrol and diesel (the most polluting is diesel).
- Delivery vans and lorries (usually powered by diesel).
- Buses powered by diesel (although transporting lots of people, reduces the number of cars).
- Factories and industry.
- Gas and coal power stations.

9,416

Londoners die early every year because of air pollution

Air pollution costs London's economy **£3.7 BILLION** each year

24%

of London's primary schools are in areas that breach the legal limit for NO<sub>2</sub>



## EFFECTS:

- Asthma - many people, like the Mayor of London, suffer from asthma, which is made worse by air pollution.
- Other breathing problems.
- Heart problems.
- Brain problems.

## SOLUTIONS:

- Fewer polluting vehicles.
- Ban the most polluting vehicles from the city centre, around schools and hospitals.
- Encourage cleaner vehicles - electric or hybrid.
- Easier and safer cycling.
- Easier and safer walking.
- Better and cheaper trains and buses.
- Stop cars from 'idling' outside schools.

## KEY WORDS:

Toxic Traffic Diesel Health Effects Particulates (soot) Causes Asthma  
Air pollution Transport (people or goods) Vehicles Solutions Emissions (exhaust fumes) NO<sub>2</sub> (nitrogen dioxide) Pollutants



# MAKE YOUR WRITING PERSUASIVE

## USE A.F.O.R.E.S.T.

*Tick them off  
as you go...*

- A Alliteration
- F Facts
- O Opinions
- R Reasons, Repetition and Rhetorical questions
- E Emotive language
- S Statistics
- T Three (rule of)

## GIVE YOUR OPINION

- In my opinion...
- I believe that...
- I feel that...
- I am sure that...
- Some believe that...
- Of course...
- Clearly...
- Surely...?

## EXPLAIN

- For this reason...
- Consequently...
- Therefore...
- As you can see...
- As a result...
- In other words...

## USE FACTS AND STATISTICS

- For example...
- In fact...
- As evidence...
- For instance...
- In support of this...
- There is no doubt that...
- Specifically...
- It is clear that...

*Could YOUR  
writing change  
someone's mind?*

## BUILD YOUR ARGUMENT

- In addition...
- Furthermore...
- Besides...
- Similarly...
- Moreover...
- Not to mention...
- On the other hand...

## APPEAL TO THE READER

- I would urge you to...
- I would encourage you to...
- Please consider...
- I suggest that...
- You should...
- You could...





A large rectangular area with a yellow border, containing 30 vertical lines for writing.



Vertical lines for writing.

Vertical lines for writing.

Vertical lines for writing.



Your school's address:

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Mr Sadiq Khan  
Mayor of London  
City Hall  
The Queen's Walk  
London  
SE1 2AA

Date:

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Dear Mr Khan,

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Causes

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Effects

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Solutions

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Yours sincerely,

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**“I NEED CLEAN AIR BECAUSE I LIKE...”**





## Reply slip

We would love to see the children's letters and posters, and would like to feature some of them on our website. If the children agree, please fill in the details below and send this slip with their work to:

**Greenpeace UK, Canonbury Villas, London, N1 2BY**

**School:**

**Class/Classes:**

**Year group/s:**

We will ensure that all letters and posters are also passed on to the Mayor. Alternatively, the letters can be sent directly to the Mayor at City Hall. Please check the children's work to ensure that no personal information is included, other than first name and age.

Thank you.