



# Toolkit for schools

**Ideas to help schools in Colchester encourage and inspire greater understanding of how we can all work together to improve the air around us.**



Colchester

# Contents

<b>Introduction</b>	<b>3</b>
<b>How can this toolkit help me</b>	<b>4</b>
<b>Additional materials and contact information</b>	<b>5</b>
<b>How to use this toolkit</b>	<b>6</b>
<b>Activities for KS1</b>	<b>7</b>
<b>Activities for KS2</b>	<b>9</b>
<b>Activities for KS3</b>	<b>14</b>
<b>Air pollution presentation</b>	<b>18</b>
<b>Air pollution short film</b>	<b>19</b>
<b>Air pollution fact sheet</b>	<b>20</b>
<b>Air pollution quiz</b>	<b>22</b>
<b>Air pollution word search</b>	<b>23</b>
<b>Air pollution colouring-in poster</b>	<b>24</b>
<b>Air pollution chatterbox</b>	<b>25</b>
<b>Air pollution monitor data collection sheet</b>	<b>26</b>
<b>Useful additional information and resources</b>	<b>27</b>



# Introduction

**We all breathe in the same air but why is it important for that air to be clean? And what can we do to improve local air quality? Air pollution may be invisible and easy to ignore but it doesn't mean it's not there.**

The purpose of this toolkit is to provide schools in Colchester with ideas for involving and inspiring young people to understand more about the air around them and encouraging everyone to take action to help improve air quality in Colchester.

This toolkit has been produced by Colchester Borough Council as part of their DEFRA funded CAREless Pollution campaign.

For further information about the CAREless Pollution campaign and other initiatives being run by Colchester Borough Council to improve air quality in our town, please visit [www.colchester.gov.uk/cleanair](http://www.colchester.gov.uk/cleanair)



## What is the CAREless Pollution campaign?

Colchester Borough Council is working with a range of local organisations and community groups to improve the quality of air that we all breathe. CAREless Pollution is a Colchester-wide campaign that is urging drivers to adopt better driving habits and switch off their engines while they wait at traffic lights, level crossings or outside schools. This is to improve their own health and help reduce air pollution in the town.

The campaign is aimed at people who regularly drive through Colchester town centre. This includes people who live in the area and drive, those who drive in and through the town to get to work, those who drive around town as part of their job and parents who keep their engines running while waiting outside the school gates.

The main source of Colchester's air pollution is exhaust fumes. Small, easy changes to driving habits, such as switching off the engine while stationary, can cut pollution by up to 30%.

# How to use this toolkit

## This toolkit contains the following elements:

- **Presentation for use in class or in an assembly**
- **Activity suggestions**
- **Short film**
- **Fact sheet**
- **Quiz**
- **Word search**
- **Colouring-in poster**
- **Chatterbox (origami game)**

As a starting point we recommend working through the fact sheet and quiz, and then building up to some of the more detailed activities. This will help pupils grasp a basic understanding of air pollution before extending their knowledge. The fact sheet and quiz are suitable for pupils across all key stages.

You can also use our assembly plan on taking personal responsibility for air pollution and the impact that individual actions can make. We have included a two minute film for you to show as part of the assembly and a template presentation.

**We all breathe in the same air but why is it important for that air to be clean? And what can we do to improve local air quality? Air pollution may be invisible and easy to ignore but it doesn't mean it's not there.**

# How to use this toolkit

The purpose of this toolkit is to provide teachers with a range of activities and ideas for involving and inspiring pupils to understand more about the air around them and encouraging everyone to take action to help improve air quality in Colchester.

There are activities to fit different time and space opportunities. Some ideas are short and suitable for a single lesson, whereas others are more detailed and appropriate for use as part of a larger project.

The activities are organised into colour-coded sections so it is easy to navigate to suggestions appropriate to different key stages:

**KS1 - blue**

**KS2 - red**

**KS3 - purple**

Each idea has been coded with one of the following symbols to indicate which curriculum subjects the activity could be linked to.



**Science** – carrying out an experiment or investigation, analysing data and communicating results



**English** – writing, debating, communicating, speaking and listening



**PSHE** – playing a role as a local citizen, learning about local issues that affect us all, participating in decision making and leadership, talking about other people's viewpoints and understanding how our actions affect the world around us



**Geography** – understanding how pollution affects our environment, using maps to plan investigations and record data



**Drama** – using role play to act out how you would approach a driver who was sitting in a car with the engine idling, asking them to switch off their engine



**Art** – using the topic of air pollution to inspire visual creativity



An Eco Club gives pupils the opportunity to improve their environmental awareness and discuss ideas/activities for improving the local environment. If your school doesn't have an Eco Club, why not consider setting one up? It can be run as a lunchtime activity or after school club. If you already have an Eco Club then the ideas in this toolkit can be shared to form part of their activities. For ideas about how to develop an Eco Clubs visit [www.eco-schools.org.uk](http://www.eco-schools.org.uk)

## Additional materials

We have a supply of CAREless Pollution campaign posters and postcards available for you to order free of charge. The posters could be displayed in the classroom or communal school spaces and the postcards could be sent home with pupils in book bags.

To order materials please email [cleanair@colchester.gov.uk](mailto:cleanair@colchester.gov.uk). Materials can be viewed at [www.colchester.gov.uk/cleanair](http://www.colchester.gov.uk/cleanair)

## Contact information

If you have any questions about this toolkit or would like any guidance as to how to use any of the ideas then please email [cleanair@colchester.gov.uk](mailto:cleanair@colchester.gov.uk)





# Activities suitable for KS1 (5-7 Year olds)



## Activity one Colour and seek

Print the word search on page 23 and the colouring-in poster on page 24 of this toolkit to use them for a class-based activity. Ask pupils to find the following within the colouring-in poster:

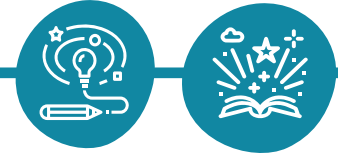
- ➔ Six possible sources of pollution
- ➔ Six local landmarks
- ➔ Ten hidden cars

The colouring-in poster can be provided to pupils for them to colour in either at school or at home, similarly with the wordsearch. Encourage pupils to show the colouring-in poster to their parents or carers and discuss with them how switching off the car engine while stationary helps reduce air pollution.



S	S	E	L	E	R	A	C	X	B	E	H	N
T	M	T	R	A	F	F	I	C	U	A	I	P
B	E	A	C	T	I	O	N	G	B	T	X	A
O	R	X	H	U	A	R	L	N	R	G	K	R
X	J	P	H	S	W	G	X	O	E	D	N	T
Y	D	O	Z	A	S	N	G	E	A	O	Z	I
G	Y	L	X	L	U	E	V	N	T	I	S	C
E	T	L	W	A	N	S	F	I	H	Q	E	U
N	K	U	P	O	C	F	T	G	E	J	M	L
O	I	T	X	L	U	N	B	N	A	L	U	A
A	X	I	D	L	I	N	G	E	T	O	F	T
I	D	O	X	F	A	B	R	E	A	T	H	E
E	K	N	F	F	O	H	C	T	I	W	S	S

# Activities suitable for KS1 (5-7 Year olds)



## Activity two Chatterbox (origami game)

Print the chatterbox on page 26 of this toolkit and use the game as a class-based or playground activity for pupils to play in pairs, threes or fours. Folding instructions are provided.

Pupils can be asked to design and make their own chatterbox linked to the topic of air pollution and incorporating images and/or information about switching off the car engine while stationary.

Encourage pupils to play the game at home with adult(s) they know who drive cars.

**Air pollution chatterbox**

These instructions show you how to fold this chatterbox.

© With thanks for the chatterbox idea to St George Breathing Better.

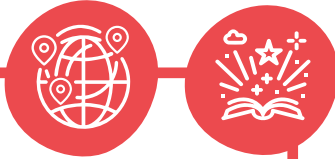
cut along the dotted line

- Spin around 5 times and then run in a straight line** (Icon: person running)
- Do the people who drive you to switch off their engine every time they wait. If they don't ask them to.** (Icon: car)
- Switching off car engines when they are stationary would cut air pollution in Colchester by 30%.** (Icon: car)
- Do 7 star jumps** (Icon: person jumping)
- Pollution is 7 times higher inside a stationary car with the engine running.** (Icon: car)
- Let on on the ground and pretend to be a hydrogen powered gas oven. A harmful and which instrument in the environment.** (Icon: car)
- Pretend to be riding on a bicycle** (Icon: bicycle)
- Two-thirds of all car journeys are for less than 5 miles. It would make just 2% of us ride instead.** (Icon: bicycle)
- Sing your favourite song** (Icon: musical notes)
- Breathing the air pollution in cities and towns is the equivalent of smoking 15 cigarettes a day.** (Icon: cigarette)
- Breathing bad air can lead to heart disease and lung problems.** (Icon: person coughing)
- Make the noise of your favourite animal** (Icon: animal)
- Can you think of any other things you can do to reduce air pollution?** (Icon: speech bubble)



# Activities suitable for KS2

## (7-11 Year olds)



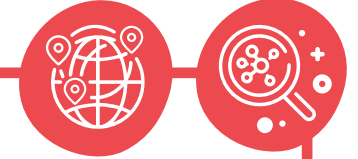
### Activity one

#### Class based map work

**Use this [Google Maps link](#) to access a map of Colchester, then move the image around until you have your school location in the centre. You might want to zoom in to ensure you can clearly see the local roads and parks around your school. Print off the selected image or display on the white board if you have one.**

Ask pupils to outline the areas they think will be most polluted from car exhaust fumes with a red line, then outline the areas where they think the air is cleanest with a green line.

Ask each group in turn to discuss their observations with the rest of the class and explain why they have chosen these areas. Ask what they think could be done to improve air quality in the worst areas. Do the other groups agree? Discuss any issues that arise and ask the pupils how they might be resolved.



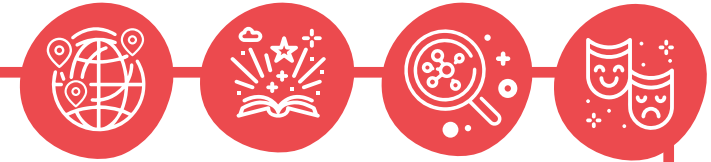
### Activity two

#### Clean routes

**As an extension to activity one, ask pupils to mark on a map the cleanest possible route they could use to travel to school and the different modes of transport they could use.**

If distance means they have to travel by car, ask them to mark on the map the places where they could switch off the engine to help reduce air pollution. If walking, cycling or scooting, mark routes away from the main roads where there is less traffic. Are there any green spaces you could use for example parks, river walks or other green spaces?

This activity could be extended further by linking with activity five and considering the health implications of air pollution and how traveling to school via clean routes will benefit the health of pupils and those accompanying them to school.



## Activity three

### Field work to measure local air quality

**Once pupils have an understanding of air pollution and its primary causes, encourage them to take part in a field experiment to monitor, record and analyse air quality levels in the area around the school.**

Pupils can draw on knowledge already gained about air pollution locally via the factsheet, quiz and activities one and two. This activity will also help them to develop analytical skills, recognise patterns in data and learn how to interpret and communicate results.

To support this activity, Colchester Borough Council has a supply of portable air quality monitors available for schools to borrow free of charge.

Firstly, ask pupils to formulate a hypothesis as a starting point for further investigation, for example, 'Air quality in the area around the school is worse at drop off and pick up'.

Next, pupils can use the portable air monitors to gather their evidence. We suggest the activity is undertaken at morning drop off, afternoon pick up and mid-morning/lunchtime when traffic should be lighter over a two week period. This will provide three distinct times to compare.

Pupils can also record the number of cars they can see sitting stationary with their engines running. An air quality monitoring data sheet is provided on page 26 to record the information.

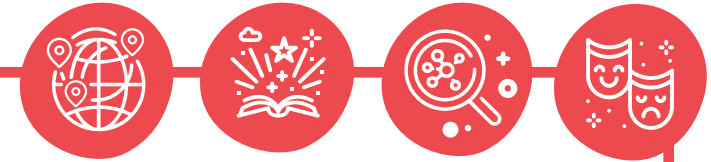
**Back in the classroom, pupils can discuss their results:**

- What did you notice about the results?
- Was there a variation in the quality of air at different times of the day?
- Was there a variation in the quality of air depending on the weather?
- Why do you think any variations occurred?
- Was there anything surprising about the results?
- Did the results prove or disprove your hypothesis?

**This can lead to a discussion about what could be done to improve air quality during the times when pollution is highest. This could include:**

- Asking their parents or carers, and their wider family to switch off their engines while stationary
- Encouraging people they know to walk, cycle or scoot to school

Finally, discuss how the results can be presented, who you are going to present them to and what your recommendations will be. We recommend pupils draft a persuasive letter including the results of their investigation and recommendations for how we can all work together to improve air quality in our town.



## Activity three

### Field work to measure local air quality

#### Recipients of the letter could include:

- Your local MP – you can search for your local MP <https://members.parliament.uk/FindYourMP>
- Your local Councillor – you can search for your local Councillor <https://www.gov.uk/find-your-local-councillors>
- The Head Teacher of your school
- Your school Governors
- Your school PTA
- Car manufacturers – you can search for local car manufacturers here

#### Recommendations could include:

- Promoting the use of alternative fuel vehicles e.g. electric
- Asking parents to switch off car engines while they are stationary outside school
- Encouraging parents and pupils to use a different mode of transport to get to school e.g. bicycle or walking. Could you ask pupils to submit the number of steps they take when walking to school and set up inter-class, year group or school competitions?

#### Supplementary activity 1 - Drama

Work in pairs or small groups to develop a role play activity, persuading car drivers to switch off their engines. How would you start a conversation? What important messages would you need to include? How would you respond if the driver said no?

#### Supplementary activity 2 – English

Encourage the class to set up a debate, for example 'This house believes that all private and commercial road use vehicles should be electric'. Would it make a difference to local air pollution? If yes, why? If no, why not? The debate can be linked to the Government announcement in November 2020 that by 2030 there will be a ban on the sale of new petrol and diesel cars.



## Activity four

I need clean air because...

**Drawing on the information pupils have learnt from the fact sheet and quiz, ask them to consider why having clean air is important. This can be in the form of a leading statement such as ‘I need clean air because...’**

Ask them to draft their own action plan for improving air quality to achieve their aim of clean air. Points to consider include:

- The impact of poor quality air on our own health
- What happens to our lungs when we breathe in polluted air
- What measures could be taken in Colchester to improve our air quality
- Who is responsible for cleaning up our air - the Council? Local businesses? Parents? All of us?

Write a persuasive letter to the Mayor of Colchester, or the Leader of the Council, setting out your action plan.

Alternatively, turn the activity in to a role play exercise for two people where one person is the Mayor and the other has to develop a convincing argument about how pollution in Colchester is a problem and how they would like the Mayor to take action. Use ambitious, persuasive language. Then switch roles.



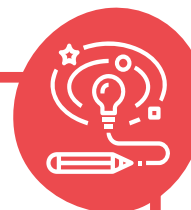
## Activity five

Health consequences of air pollution for children

**Children are one of the vulnerable groups who are at risk from breathing in poor quality air, because it can affect their lung development. Ask pupils to think about the health consequences of air pollution (there is information in the fact sheet to help with this). They could consider the following questions:**

- How could poor quality air make you feel physically and mentally?
- Do they know anyone who has asthma or another lung condition? How could air pollution affect them?
- How could air pollution affect you and your family? What impact does poor quality air have on our health care services?
- Apart from children, who else is vulnerable to air pollution in the community and how could you help them?
- What measures could be taken to reduce air pollution locally?

Discuss different modes of transport that you could use to travel to school that help reduce air pollution – this links with activity two about developing ‘clean’ routes to school.



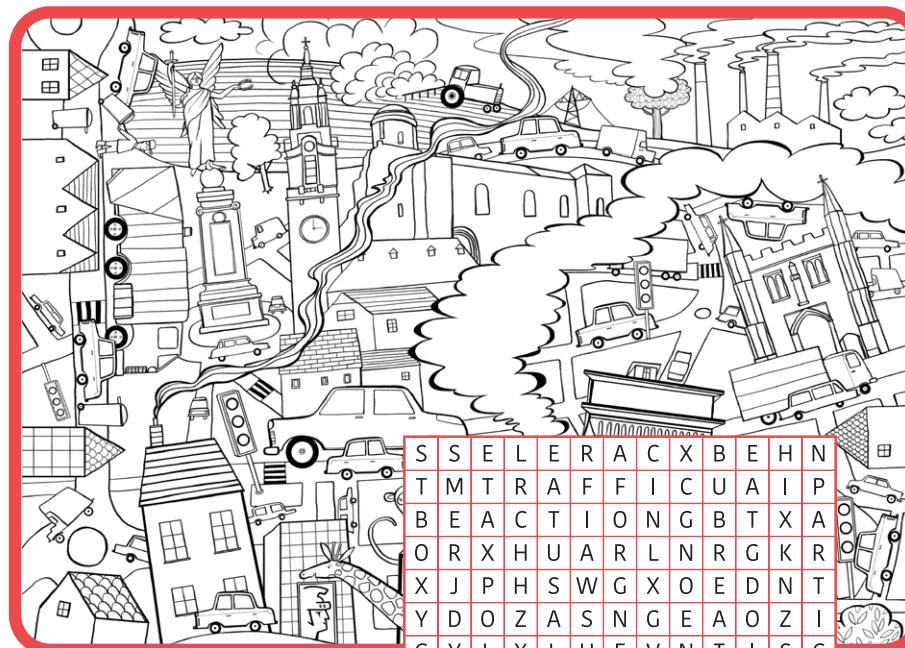
## Activity six

### Colour and seek

Print the colouring-in poster and wordsearch included in this toolkit and use them as a class-based activity. Ask pupils to find the following within the colouring-in poster:

- Six possible sources of pollution
- Six local landmarks
- Ten hidden cars

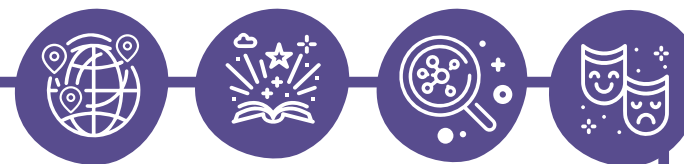
The colouring-in poster can be provided to pupils for them to colour in either at school or at home, similarly with the wordsearch. Encourage pupils to show the colouring-in poster to their parents or carers and discuss with them how switching off the car engine while stationary helps reduce air pollution.



S	S	E	L	E	R	A	C	X	B	E	H	N
T	M	T	R	A	F	F	I	C	U	A	I	P
B	E	A	C	T	I	O	N	G	B	T	X	A
O	R	X	H	U	A	R	L	N	R	G	K	R
X	J	P	H	S	W	G	X	O	E	D	N	T
Y	D	O	Z	A	S	N	G	E	A	O	Z	I
G	Y	L	X	L	U	E	V	N	T	I	S	C
E	T	L	W	A	N	S	F	I	H	Q	E	U
N	K	U	P	O	C	F	T	G	E	J	M	L
O	I	T	X	L	U	N	B	N	A	L	U	A
A	X	I	D	L	I	N	G	E	T	O	F	T
I	D	O	X	F	A	B	R	E	A	T	H	E
E	K	N	F	F	O	H	C	T	I	W	S	S

# Activities suitable for KS3

## (11-14 Year olds)



### Activity one

#### Field work to measure local air quality

**Once pupils have an understanding of air pollution and its primary causes, encourage them to take part in a field experiment to monitor, record and analyse air quality levels in the area around the school.**

Pupils can draw on knowledge already gained about air pollution locally via the factsheet and quiz. This activity will also help them to develop analytical skills, recognise patterns in data and learn how to interpret and communicate results.

To support this activity, Colchester Borough Council has a supply of portable air quality monitors available for schools to borrow free of charge.

Firstly, ask pupils to formulate a hypothesis as a starting point for further investigation, for example, 'Air quality in the area around the school is worse at drop off and pick up'.

Next, pupils can use the portable air monitors to gather their evidence. We suggest the activity is undertaken at morning drop off, afternoon pick up and mid-morning/lunchtime when traffic should be lighter over a two week period. This will provide three distinct times to compare.

Pupils can also record the number of cars they can see sitting stationary with their engines running. An air quality monitoring data sheet is provided on page 26 to record the information.

Back in the classroom, pupils can discuss their results:

- What did you notice about the results?
- Was there a variation in the quality of air at different times of the day?
- Was there a variation in the quality of air depending on the weather?
- Why do you think any variations occurred?
- Was there anything surprising about the results?
- Did the results prove or disprove your hypothesis?

This can lead to a discussion about what could be done to improve air quality during the times when pollution is highest. This could include:

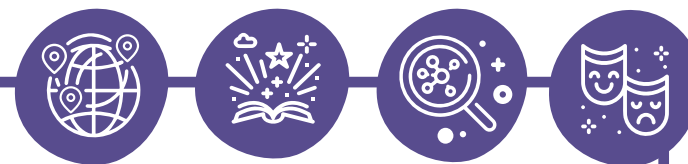
- Asking drivers to switch off their engines while stationary
- Encouraging people to walk, cycle or scoot to school

Finally, discuss how the results can be presented, who you are going to present them to and what your recommendations will be. We recommend pupils draft a persuasive letter including the results of their investigation and recommendations for how we can all work together to improve air quality in our town.



# Activities suitable for KS3

## (11-14 Year olds)



### Activity one

#### Field work to measure local air quality

Recipients of the letter could include:

- Your local MP – you can search for your local MP <https://members.parliament.uk/FindYourMP>
- Your local Councillor – you can search for your local Councillor <https://www.gov.uk/find-your-local-councillors>
- The Head Teacher of your school
- Your school Governors
- Your school PTA
- Car manufacturers – you can search for local car manufacturers here

Recommendations could include:

- Promoting the use of alternative fuel vehicles e.g. electric (see supplementary activity below)
- Asking parents to switch off car engines while they are stationary outside school (visit [www.colchester.gov.uk/cleanair](http://www.colchester.gov.uk/cleanair) for more information about the Careless Pollution campaign)
- Encouraging parents and pupils to use a different mode of transport to get to school e.g. bicycle or walking. Could you ask pupils to submit the number of steps they take when walking to school and set up inter-class, year group or school competitions?

#### Supplementary activity 1 – Drama

Work in pairs or small groups to develop a role play activity, persuading car drivers to switch off their engines. How would you start a conversation? What important messages would you need to include? How would you respond if the driver said no?

#### Supplementary activity 2 – English

Encourage the class to set up a debate, for example 'This house believes that all private and commercial road use vehicles should be electric'. Would it make a difference to local air pollution? If yes, why? If no, why not? This activity is particularly pertinent given the Government's announcement to end the sale of new petrol and diesel cars by 2030.



## Activity two

I need clean air because...

**Drawing on the information pupils have learnt from the fact sheet and quiz, ask them to consider why having clean air is important. This can be in the form of a leading statement such as ‘I need clean air because...’**

Ask them to draft their own action plan for improving air quality to achieve their aim of clean air. Points to consider include:

- The impact of poor quality air on our own health
- What happens to our lungs when we breathe in polluted air
- What measures could be taken in Colchester to improve our air quality
- Who is responsible for cleaning up our air - the Council? Local businesses? Parents? All of us?

Write a persuasive letter to the Mayor of Colchester, or the Leader of the Council, setting out your action plan.

Alternatively, turn the activity in to a role play exercise for two people where one person is the Mayor and the other has to develop a convincing argument about how pollution in Colchester is a problem and how they would like the Mayor to take action. Use ambitious, persuasive language. Then switch roles.



## Activity three

Health consequences of air pollution for children

**Children are one of the vulnerable groups who are at risk from breathing in poor quality air, because it can affect their lung development. Ask pupils to think about the health consequences of air pollution (there is information in the fact sheet to help with this). They could consider the following questions:**

- How could poor quality air make you feel physically and mentally?
- Do they know anyone who has asthma or another lung condition? How could air pollution affect them?
- How could air pollution affect you and your family? What impact does poor quality air have on our health care services?
- Apart from children, who else is vulnerable to air pollution in the community and how could you help them?
- What measures could be taken to reduce air pollution locally?

Discuss different modes of transport that you could use to travel to school that help reduce air pollution – this links with activity two about developing ‘clean’ routes to school.



## Activity four

### Studying exhaust fumes

**The main source of air pollution in Colchester is exhaust fumes from cars, vans and other vehicles on the road. By switching off a car engine while stationary, air pollution in Colchester could be cut by up to 30%.**

The main components of exhaust fumes are sulphur dioxide, nitrogen oxide, carbon dioxide, carbon monoxide and particulate matter.

Ask pupils to undertake some desk research about these air pollutants, considering some of the following questions:

- How are the gases formed?
- What is particulate matter and how is it created?
- How can these air pollutants damage our health when breathed in?
- List some additional sources of these pollutants apart from exhaust fumes
- What measures can be taken to reduce levels of these gases in the air?



## Activity five

### Design a poster

**Ask pupils to visually represent what air pollution means to them or create an image of what air pollution does to their health and incorporate their designs in to a poster encouraging people in town to switch off their engines every time they wait.**

Alternatively, using the colouring-in poster included as part of this toolkit as inspiration, design a picture incorporating six major sources of air pollution alongside your choice of iconic Colchester landmarks. You could incorporate some fun 'hide and seek' elements with hidden cars or gases. Create a class display with all the completed posters or share your work with younger year groups and ask them to complete the activities.



### Feedback

We would love to know how you get on with these activities and to see any results you achieve. If you are happy to share then please email your work to [cleanair@colchester.gov.uk](mailto:cleanair@colchester.gov.uk) For more information about the CAREless pollution campaign please visit [www.colchester.gov.uk/cleanair](http://www.colchester.gov.uk/cleanair)

# Air pollution presentation



Please use our presentation as part of an assembly or classroom lesson. It explains the impact of leaving car engines running when stationary.

You can download a copy of the Powerpoint presentation at <https://www.colchester.gov.uk/environmental-protection/clean-air-for-colchester-project/careless-pollution-toolkit>



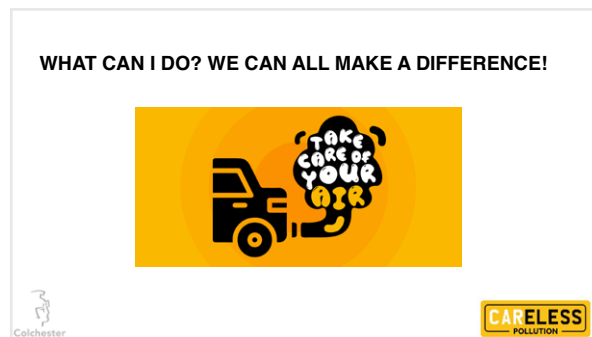


**What is air pollution?**

- The presence of toxic substances in the air
- Harmful to the health of humans and other living beings
- Not always visible and can be odorless too, which means that people can be unaware that they are breathing it in





**Why is air pollution a problem around schools?**

- Children are particularly vulnerable to air pollution
- It can affect the development of their lungs
- Air pollution outside schools can be 30% higher than elsewhere in the town due to idling vehicles – that means stationary with the engine running





**“Never doubt that a small group of thoughtful committed individuals can change the world. In fact, it’s the only thing that ever has.”**  
*Margaret Mead*



**Take personal responsibility**

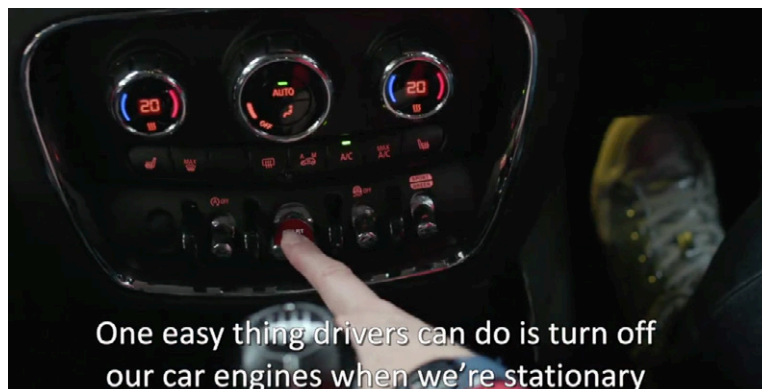
- We **ALL** have a role to play in helping to clean up the air in our town
- Our individual actions may seem small but they **WILL** make a difference
- We can start by asking the person who drives us to school to switch off the car engine every time they wait:
  - Outside school
  - At traffic lights
  - At level crossings
- Every time you switch off your engine you save 100% of your car’s emissions



# Air pollution short film

Please use our short two-minute film as part of an assembly or classroom lesson. It explains the impact of leaving car engines running when stationary.

You can download a copy of the film (20MB file size) at <https://www.colchester.gov.uk/environmental-protection/clean-air-for-colchester-project/careless-pollution-toolkit>



# Air pollution fact sheet



## How to use this section of the toolkit

Please find below a series of facts about air pollution including how it affects us here in Colchester. You can use this fact sheet as a discussion guide to help introduce the subject to the class and talk about what we can all do to help improve the quality of the air we breathe.

When you have finished your discussions on air pollution, please use the accompanying quiz on page 22 to test your pupils' knowledge. There are also additional activities in this toolkit to help you delve further into the subject matter depending on your time and interest.

## What is air pollution?

Air pollution is the presence of toxic substances in the air which can be harmful to the health of humans and other living beings, and cause damage to our environment. There are different types of air pollutants such as gases and particulates (microscopic matter suspended in the air) which can come from many different sources. Air pollution isn't always visible and can be odourless too.

## What are the main sources of air pollution?

In towns and cities, the main source of air pollution is road transport. Diesel and petrol vehicles create pollutants, including nitrogen dioxide and particulate matter, and the friction of brakes and tyres on the road also contributes to poor quality air. Other sources of air pollution include burning fuel in houses for heating or cooking, emissions from power stations, industry and farming.

## What is the main source of air pollution in Colchester?

The main source of Colchester's air pollution is exhaust fumes from cars, lorries and other vehicles travelling in and around the town. Air pollution can be 30% higher outside schools because of idling cars (a car is stationary with the engine running).

## Why is air pollution a problem in Colchester?

As the oldest Roman town in Britain, Colchester has many narrow roads in the town centre. The buildings form a canyon-like environment that can trap air pollutants, which means we end up breathing them in.

In Colchester there are three Air Quality Management Areas (AQMAs) where pollution levels exceed national guidelines. The AQMAs cover the town centre and the residential areas of Brook Street, Magdalen Street and the lower end of Mersea Road.

## Which toxic gases are found in exhaust fumes?

Exhaust fumes from vehicles such as cars, vans, lorries and buses contain toxic gases including nitrogen oxide, carbon monoxide, carbon dioxide and sulphur dioxide.



# Air pollution fact sheet



## **What does it mean when a car engine is ‘idling’ and why is it a problem?**

Idling refers to a car that is stationary but has the engine running, for example waiting at a level crossing or outside a school. Idling engines are a significant contributor to air pollution because they produce higher concentrations of air pollution than a car in motion. This pollution can accumulate inside the car by natural circulation of air or suction through the ventilation system and is breathed in by everyone inside the car.

## **Am I protected from air pollution when I travel to school in a car?**

No you are not protected from air pollution inside a car. Researchers found that pollution inside a stationary car with the engine running (for example waiting at traffic lights or outside school) can be up to seven times higher compared to air outside the car and in some cases this could be much higher.

## **How does switching off a car engine when stationary help improve air quality?**

Switching off your engine when you are waiting at traffic lights, level crossings or outside schools is a really easy way to help cut air pollution in Colchester by up to 30%. It means that anyone who is near a road with idling cars, or sitting inside an idling car, doesn't have to breathe in harmful emissions. That includes people who live in streets with lots of traffic, children on their way to school, people on their way to work, the person in the car behind you and you sitting behind another car.

## **How does poor quality air affect our health?**

Air pollution reduces life expectancy and is linked to 1 in 20 deaths in Colchester. It is recognised as a contributing factor in the development of lung conditions, heart disease and cancer. There is also evidence highlighting possible links between air pollution and diabetes, dementia and underweight births.

## **Which groups of people are particularly vulnerable to poor quality air?**

Breathing in poor quality air is bad for everyone but there are certain groups of people who are particularly vulnerable including pregnant women, babies, children, people with existing respiratory problems as well as elderly people.

## **What is Colchester Borough Council doing to help?**

CAREless Pollution is a new campaign in Colchester that is urging drivers to adopt better driving habits and switch off their engines while they wait at traffic lights, level crossings or outside schools, to improve their own health and help reduce air pollution in the town.

# Air pollution quiz



The quiz questions below accompany the fact sheet in this toolkit. Once you have read through the fact sheet about air pollution and discussed it in class, you can test your pupils' knowledge in the quiz below. The answers are listed at the bottom – no cheating!

**1. What is air pollution?**

- a. The smell of a rotten egg
- b. Toxic substances in the air
- c. Releasing a helium balloon

**2. Which of the following is a source of air pollution?**

- a. A television
- b. A dog
- c. A lorry

**3. What is the main source of air pollution in Colchester?**

- a. Houses
- b. Cars
- c. Offices

**4. Vehicle exhausts produce which of the following gases?**

- a. Nitrogen oxide
- b. Carbon dioxide
- c. Carbon monoxide
- d. All of the above

**5. What is an idling engine?**

- a. An engine that is lazy
- b. An engine that is switched off
- c. An engine that is left running when a car is stationary

**6. Pollution inside a stationary car with the engine running is higher than outside. True or False?**

- a. True
- b. False

**7. Switching off the car engine while stationary can cut air pollution in Colchester by how much?**

- a. 10%
- b. 20%
- c. 30%
- d. It won't make any difference

**8. Poor quality air can affect all of us, but which of these groups are particularly vulnerable?**

- a. Elderly people
- b. Pregnant women
- c. Children
- d. People with lung problems
- e. All of the above

**9. What effect does air pollution have on our health?**

- a. It helps us to breathe more easily
- b. It can cause heart disease, cancer and lung problems
- c. It helps us to live longer

**10. Which of the following is a 'clean' form of transport that could help reduce air pollution in our town?**

- a. Walking
- b. Taking a taxi
- c. Riding a motorbike

**Answers:**

1. B 2. C 3. B 4. D 5. C 6. A 7. C 8. E  
9. B 10. A



## Air pollution word search

Can you find the 15 words related to air pollution hidden in this word search?

Action

Air

Breathe

Car

Careless

Engine on

Exhaust

Fumes

Idling

Nitrogen oxide

Oxygen

Particulate

Pollution

Switch off

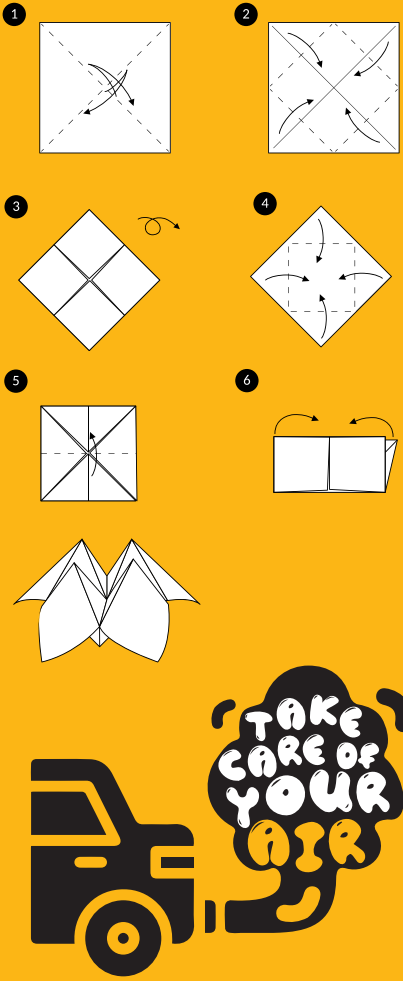
Traffic

S	S	E	L	E	R	A	C	X	B	E	H	N
T	M	T	R	A	F	F	I	C	U	A	I	P
B	E	A	C	T	I	O	N	G	B	T	X	A
O	R	X	H	U	A	R	L	N	R	G	K	R
X	J	P	H	S	W	G	X	O	E	D	N	T
Y	D	O	Z	A	S	N	G	E	A	O	Z	I
G	Y	L	X	L	U	E	V	N	T	I	S	C
E	T	L	W	A	N	S	F	I	H	Q	E	U
N	K	U	P	O	C	F	T	G	E	J	M	L
O	I	T	X	L	U	N	B	N	A	L	U	A
A	X	I	D	L	I	N	G	E	T	O	F	T
I	D	O	X	F	A	B	R	E	A	T	H	E
E	K	N	F	F	O	H	C	T	I	W	S	S



# Air pollution chatterbox

These instructions show you how to fold this chatterbox.



© With thanks for the chatterbox idea to St George Breathing Better.

© Colchester Borough Council



**Spin around 5 times and then run in a straight line**

Do the people who drive you to school every time they don't ask them to.



**Stand on one leg and count to 30**

Switching off car engines when they are stationary would cut air pollution in Colchester by 30%.



**Do 7 star jumps**

Pollution is 7 times higher inside a stationary car with the engine running.



**Lie on the ground and pretend to be asleep**

Vehicle exhausts produce nitrogen oxide a toxic gas which is harmful to the environment and human health.



**Pretend to be riding on a bicycle**

Two-thirds of all car journeys are for less than 5 miles. It would take just 20 minutes to cycle instead.



**Sing your favourite song**

Breathing the air pollution in cities and towns is the equivalent of smoking 1.5 cigarettes a day.

**Count backwards from 10 as fast as you can**

String with the car engine running for 10 seconds uses more fuel than switching on and off.



**Make the noise of your favourite animal**

Breathing bad air can lead to heart disease, cancer and lung problems.



## Air pollution monitoring data collection sheet

Use this sheet to record findings from your air quality monitoring. Make sure you record the time of day you make your observations and collect data. It can be interesting to compare results at the start of the school day, with lunchtime and then at the end of the school day.

Date	Time	Location	Weather	Pollution reading*	How many vehicles can you see sitting with their engines running	Use this column to record anything else you notice (think about what you can hear, see and smell)

We suggest the activity is undertaken at morning drop off, afternoon pick up and mid-morning/lunchtime when traffic should be lighter over a two week period. This will provide three distinct times to compare. Air quality monitors can be borrowed from the Air Quality Team at Colchester Borough Council by contacting Rosie Welch at [cleanair@colchester.gov.uk](mailto:cleanair@colchester.gov.uk).



**Air quality monitor pollution readings: Red = high pollution Amber = medium pollution Green = low pollution**



## Useful additional information and resources for schools



### **3PR - [www.schoolparking.org.uk](http://www.schoolparking.org.uk)**

The 3PR School Parking Initiative aims to prevent inconsiderate, illegal and dangerous parking around schools. If you are a concerned teacher, school staff member or parent please contact the 3PR Team via the website (address above) to find out how 3PR can help relieve parking problems by your school. You will receive support from your local officer who will carry out an initial assessment, create a personalised map and assist with the launch of the 3PR scheme. Following the launch, they will be on hand to assist with any ongoing parking issues, host refresher assemblies and meet school councils to create new parking ideas and projects. Schools will receive all necessary resources free of charge. This includes information booklets, 3PR patrol uniforms, tokens, a trophy, railing banners and more.

### **School Travel Plans**

The way children travel to school can have an enormous impact on their lifestyle. Greater numbers of parents taking their children to and from school by car is contributing to increased congestion, higher levels of pollution and greater risk to pedestrians and cyclists from cars. A school travel plan may be able to address some of these problems, by looking at the issues that are barriers to sustainable travel, then recommending practical ways to reduce the number of car trips made to a school.

To help develop a School Travel Plan, a new and free national accreditation scheme has recently been launched. Modeshift STARS has been established to recognise schools that have demonstrated excellence in supporting cycling, walking and other forms of sustainable

travel. Schools can register on the scheme for free and will be granted access to an online system, guiding them through each element of a Travel Plan with user-friendly instructions.

Essex County Council's Sustainable Travel Planning Advisors can also provide free support and guidance and are happy to share ideas that have worked well in other similar schools. To get started, you can either register your school on the Modeshift STARS website (<https://modeshiftstars.org>) or contact [travelplanteam@essex.gov.uk](mailto:travelplanteam@essex.gov.uk) or 0333 013 9390

### **The Clean Air for Schools Framework**

[www.transform-our-world.org/programmes/clean-air-for-schools](http://www.transform-our-world.org/programmes/clean-air-for-schools)

A recent analysis conducted by Global Action Plan and Queen Mary University of London found that a 50% reduction in air pollution around schools across the UK and Ireland could halve the number of children who have lung function so poor as to affect their everyday lives.

The Clean Air for Schools Framework is a free, online tool to help every school tackle air pollution in and around the school. Choose from over 35 actions based on existing research, best practice, academic insights and in-school air quality testing by the University of Manchester.

You will also find advice and resources developed by the range of organisations committed to improving air quality in and around schools, including Living Streets, Mums for Lungs, Sustrans, Modeshift STARS, Unicef and many more.

**CARELESS**  
— POLLUTION —



Colchester