



# Towards Clean Air Classrooms

An air quality programme by Global Action  
Plan & Johnson Matthey





# The Towards Clean Air Classrooms programme

## About the Towards Clean Air Classrooms programme

The 'Towards Clean Air Classrooms' programme was a nationwide experiment in 2020 to see how air purification technology could improve air quality in your classroom. Research has shown that indoor air pollution can affect the health, wellbeing and concentration of young people. The study monitored the impact of air purifying equipment in the classroom, helping to improve the air that young people breathe in at school, whilst also encouraging young people to take action against air pollution, to create cleaner air classrooms. This activity booklet was created for participating teachers to use as inspiration for additional activities they could do with the class. However, these activities can be done by any school and are now freely available through [Transform Our World](#).

## Who is involved?

It was a collaborative programme between Johnson Matthey, a leading sustainable technologies company, and environmental behaviour change charity, Global Action Plan.

[Johnson Matthey](#) is a global leader in sustainable technologies, applying cutting-edge science to create solutions that make a real difference to the world around us. They've been leaders in this field for more than 200 years, applying unrivalled scientific expertise to enable cleaner air, improved health and the more efficient use of our planet's natural resources.

[Global Action Plan](#) connect what's good for us with what's good for the planet through their award-winning environmental behaviour change programmes.

## About air pollution

Air pollution is an umbrella term for lots of different types of pollutants in the air around us. All these pollutants can be inhaled and absorbed into your body. For the most part, air pollution is invisible to the naked eye, but just because you can't see it, doesn't mean it's not there.

Whilst our bodies work hard to filter out as much pollution as possible, the smallest particles, known as Fine Particulate Matter (PM2.5), are small enough to enter the bloodstream. It is thought that up to 36,000 deaths each year in the UK are caused by air pollution.





For more information, please visit

[cleanairhub.org.uk](https://cleanairhub.org.uk)

## Main sources of air pollution

Air pollution comes from lots of different sources and can be found in both rural and urban areas.

- **Road transport** is the main source of nitrogen dioxide.
- **Household burning**, such as the use of wood stoves, is the major source of Particulate Matter pollution.
- **Energy generation** and the industry are the biggest source of sulphur dioxide.
- **Solvents** in household products is the largest source of VOCs.



## How we can all make a difference

Air pollution is a big health and environmental issue, but there are things that we can all do to make ourselves, our family and others safer.

The top 3 actions you can take are:

- Walk and cycle more, especially using the back streets away from polluting traffic.
- Avoid unnecessary burning and use ready to burn materials if you do rely on wood for your heating.
- If you do have to drive, switch your engine off when you're stationary, and try to choose electric vehicles where you can.





## About Clean Air Detectives

The Clean Air Detectives is a set of educational activities designed to engage students with the issue of air pollution in their classroom and local community and to take meaningful action for cleaner air.

The activities are centred around four themes:

- Analyse** Students will represent the data that has been collected by an air monitor in a school on graphs and charts and will compare this to data.
- Identify** Students will learn about how our lungs work and the impact air pollution has on their respiratory system.
- Act** Students identify the cause of air pollution that they most want to address and create a campaign for change in their local community.
- Report** Students will report on the issue of air pollution by writing scripts for their own news broadcasts and recording these (if possible).

These can be delivered as stand-alone activities that can be linked to other ongoing lessons or alternatively as a series following the order above. An accompanying '**Detectives Logbook**' is provided to help guide students through the activities under each theme.



## Analyse the data

**Background:** In the experimental phase of the programme an air quality monitor collect data from various different classrooms over a couple of months. Some of the real-life data from this experiment is provided to you. To make data as accessible as possible to others, it is helpful for it to be represented visually on graphs, allowing you to compare between days and weeks.

**Learning Objectives:** Students will compare graphs and select the most appropriate graph to display their data. Students will be able to plot basic data on a line graph and think critically about what is being displayed.

**You will need:**  
PowerPoint slides (2-9)  
Logbook

**Curriculum Links:** Complete, read and interpret information in tables, interpret and construct pie charts and line graphs and use these to solve problems (Maths).

**Activity 1:** Explain to your class that it's important that you understand the data that you're looking at and what it is showing you. Slides 4-6 show three different types of graph, all showing different types of data. Ask the class why they think each type may have been chosen. What do they like about these graphs and what would do they think is missing? Are there any questions they would ask?

**Activity 2:** Using the real-life data provided, in the table on slide 7. Ask students to choose either temperature, CO<sub>2</sub> or FPM to plot on a graph. Ask students what type of graph they think would be best for this? You can also ask students to plot the data from a school in summer (provided in the Logbook) onto the same graph using a different colour to compare.

**Activity 3:** Ask students key questions to analyse the data, such as:

What was the maximum/minimum reading for winter/summer?

What time of day?

Thinking about your own school day, why do you think this was?

What are the similarities/differences between the data in winter and the data from summer?



## Identify the victims

**Background:** Air pollution worsens the symptoms of asthma and frequency of attacks and, for some, it can be the cause of asthma developing. Children's lungs are still developing, meaning they have a higher risk of developing asthma through damage caused by pollutants. Exposure at a young age can lead to multiple health problems later in life.

**Learning Objectives:** Students will understand the impact air pollution has on their lungs and airways and will be able to identify parts of the respiratory system. Students will be able to describe the difference between normal and asthma affected lungs.

**Curriculum Links:** Identify and name the main parts of the human respiratory system (Science) and how to keep safe in the local environment (PSHE).

**You will need:**

PowerPoint slides (10 - 18)  
Logbook  
Paper straws  
Paper bags  
Sellotape  
YouTube

**Activity 1:** Ask students to take deep breaths in and out and to observe what they notice. What is happening to their chests? Watch this video about [how our lungs work](#).

**Activity 2:** Students will make their own paper lung. They will draw a lung on to their paper bag, then tape a paper drinking straw to the top, lining this up with the trachea, and seal the bag. Ask students to try breathing through their straw and then to squeeze one paper straw to narrow the airway. Ask students how it felt breathing through each of these 'airways' and what happened to the lung. Explain that this is what it might feel like to have asthma.

**Activity 3:** Watch [Joe's Story](#) and ask students to make notes in their Logbooks. Discuss the questions together as a class afterwards.

**Activity 4:** In their Logbooks, ask students to look at some of the impacts of air pollution. You can ask students to rank these according to which they think are most serious or to decide which one impact they think is the most serious. To finish, ask students which of the three options for avoiding air pollution would be easiest for them.





## Act for change

**Background:** We can all make small changes that can have a huge impact on the quality of the air we breathe. We can also join together to campaign for meaningful change that will improve air quality for the wider community. Engaging young people in meaningful practical action can help activate positive changes for the environment and provide students a context in which to realise the power of their voice.

**Learning Objectives:** Students will be able to evaluate the best course of action for change in their school. They will be able to communicate the issue to an identified audience.

**You will need:**  
PowerPoint slides (19-27)  
Logbook

**Curriculum Links:** Developing skills of speaking and writing for a purpose, communicating to the wider community in the context of an issue which is real, relevant and motivating (English). Recognising that individual choices and behaviour can affect issues and playing an active role as citizens, making real choices, participating in decision making and leading a healthier, safer lifestyle (PSHE/Citizenship).

**Activity 1:** Look again at the sources of air pollution. Ask students to think about which source might affect the air quality in their local community and school the most.

**Activity 2:** Ask students to identify the source of air pollution that they most want to address. Some examples of other student clean air campaigns are given in the slides. Can they think of ideas that might work in their school?

**Activity 3:** Students will choose one of these ideas for change and design an action plan to implement this in their school and community. They will do this through encouraging others to change their behaviour to improve air quality, for example, reducing pollution from:

- vehicles by encouraging others to walk or cycle;
- waste by encouraging others to reduce, reuse, recycle;
- agriculture by encouraging others to buy locally grown, organic food.

Students can choose how they want to communicate their message to others e.g. a poster, an assembly, a letter to their MP. Encourage students to think about the best ways to engage people to make their campaign different, fun and easy for all to engage with.



## Report to the world

**Background:** Air pollution is a huge issue for the environment and for our health. It is linked to the deaths of 36,000 people each year and it affects many more every day through asthma and other related illnesses. Raising awareness of this huge environmental and health issue is critical to tackling it.

**Learning Objectives:** Students will be able to summarise the issue of air pollution, draw on key information from their own air quality investigations and communicate this to an audience.

**Curriculum Links:** Reporting and presenting findings from enquiries, communicating scientific information (Science) and developing skills of speaking and writing for a purpose, communicating to the wider community in the context of an issue which is real, relevant and motivating (English).

**You will need:**  
PowerPoint slides (28-32)  
Logbook  
YouTube  
BBC News Writing

**Activity:** Students will be tasked with creating their own news report about air pollution.

To get started, watch this [YouTube](#) clip of a news broadcast from the BBC about air quality in schools. It also provides lots of ideas for action! Ask students what was good/bad about the broadcast and what they would do differently. This [clip](#) from Huw Edwards also provides tips on what makes a good news report.

Students should then write their own script for a news report about the issue. Encourage them to think about this as a story, using the points on the slides. They should keep their report clear and concise and should try to include facts and evidence from their Logbook. They should think about key members of the community that they can interview as part of the report.

Students can act out their reports in groups or these could be recorded and shown in assembly for other students to learn about the issue.





Keep in touch

We would love to hear about how your school is improving air quality in the classroom.

Please keep in touch via:

[transformourworld@globalactionplan.org.uk](mailto:transformourworld@globalactionplan.org.uk)



For more information, please visit:

[cleanairhub.org.uk](http://cleanairhub.org.uk)