

LESSON PLAN FOR



HOW DOES AIR POLLUTION AFFECT THE HUMAN BODY?

Science | Health Education

National curriculum learning objectives

- KS3: Pollution – monitoring and maintaining the environment.
- Combustion of hydrocarbon fuels and incomplete combustion.
- The respiratory system in humans. Gas exchange system. How to maintain a healthy respiratory system. Impacts of air pollution and smoking on the lungs.

Skills development

- Sharing thoughts and opinions
- Interrogating sources of information
- Justifying opinions



Resources needed

- Lesson Presentation
- Starter Sheet (place on desks prior to the start of the lesson)
- Different Types of Pollution Worksheet
- How Does Air Pollution Affect the Human Body? Information Sheet
- Air Pollution Human Body Labelling Sheet
- Plenary Sheet
- Home Learning Task (as required)

Key vocabulary

Pollution, toxic, particulate matter, nitrogen dioxide, pollutants, respiratory, microns, fossil fuel, ozone, exposure, significance, vulnerable, data. nitrogen oxide, sulphur dioxide, carbon monoxide, trachea, stroke, pulmonary disease, cardiovascular disease.

Prior learning

No prior learning is strictly necessary although some pupils will undoubtedly be aware of the respiratory system and the impact people are having on the planet and the environment. Make links to prior knowledge, where appropriate, to help provide a wider context and build on pupil's understanding of lung health and pollution.

Time	Teacher Activity	Adaptations
5 mins	<p>Use the Lesson Presentation to introduce the lesson and encourage students to get straight on with the starter activity, using the starter sheets you've issued to them. Ask students to attempt to identify the correct order of events in the gas exchange process by numbering the different stages. Use slide 4 to go through the correct order.</p> <p>Go on to introduce the learning objectives for this lesson on slide 5.</p>	Explain vocabulary in the presentation as required. Invite and answer questions throughout to ensure pupils' understanding.
10 mins	Use slide 6 to stress the importance and frequency of breathing in human life. Hand out the Types of Pollution Worksheet and use slide 7 to introduce the main types of air pollution. Students are to match the pollution name with its description. Use slide 8 to go through the correct answers.	
20 mins	Use slide 9 to explain the prevalence of air pollution and the impact it has on mortality in Britain and the world. Then, hand out the How Does Air Pollution Affect the Human Body? Information Sheets and the Air Pollution Body Labelling Sheets . Students should carefully read the information and then label the body diagram to explain how various body parts are affected.	This provides an opportunity to reinforce anatomical understanding by discussing or explaining the location of various organs.
10 mins	Use slide 11 to explain the various reasons why children are more at risk from air pollution. Then set the task of asking the students to explain which reason they think is the most important for this increased susceptibility. Share answers and discuss as a class.	Random name selectors could be used here to elicit responses from the students.
10 mins	Use slide 12 to explain why monitors are helpful in protecting children and others from air pollution. Set the students the task of identifying where they would install air monitors on the school site and explain the choice of their locations. Share answers and discuss the possible impact that air monitors might have on air quality in school.	

5 mins	Revisit the learning objectives on slide 13 and handout the Plenary Sheet and Home Learning Task (if required). Students are to read through the key terms and identify an odd one out from each group. They are then to give a precise reason why it is the odd one out.	Emphasise the importance of giving a precise explanation for their choice of odd one out.
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Lesson reflections / teacher assessment

Assessment opportunities

- Can the students identify the different stages of how the human body extracts oxygen from the air?
- Can the students describe the different types of air pollution?
- Can the student explain how air pollution affects the human body?

Suggestions for future learning

- Research how air pollution leads to greater inequality in society.
- Install air quality monitors in the school to identify the levels of pollution at various sites on the school grounds and monitor results.

Home learning opportunities

- Students can use the **Home Learning Task** to write a paragraph about air pollution that contains various key words in a set order. The paragraph must also contain information that has not been covered in the lesson so requires an element of research.