

7th- 8th Grade Science / Geography / Civics Lesson Adaptable for 9th-10th Grade Classrooms

Notes for educators:

The Freedom to breathe teaching resources have been developed by educational professionals and will achieve three key learning outcomes. **Students will:**

1. Understand the state of air quality in their city, and how it compares to other cities.
2. Understand the health impacts of air quality on their physical health, mental health and their ability to learn.
3. Understand how they can claim their right to clean air by understanding what the UN Convention on the Rights of the Child is. It is focused on their rights to the best possible health, clean water and a clean environment (article 24), but does not include the explicit 'right to clean air.'

Curriculum links: this primarily links to the Next Generation Science Standards, but of course also touches on History-Social Science Standards

Freedom to breathe aims to gather the support of 20,000 children from four target cities (starting with Beijing, Delhi, London, Los Angeles) - in support of a call to the UN to acknowledge Children's Right to Clean Air. Students will have the opportunity to join a virtual event in November to hear the response from the UN.



7th- 8th Grade Science / Geography / Civics Lesson Adaptable for 9th-10th Grade Classrooms

Notes for educators:

- See powerpoint slides' notes section for additional information and guidance.
- These activities are aimed at 7th and 8th grade students but could also be used by 9th and 10th grade students with differentiation by outcome.
- **Advance preparation** – print and cut cards for the debate (activity 2).
- **Next steps** - to register your student's voice – please use <https://www.blueair.com/us/freedomtobreathe.html> and send a selection of any work your students do to freedomtobreathe@ccair.org (e.g. poems, stories, drawings, letters etc.). Remember to anonymise this for safety considerations.



Freedom to breathe

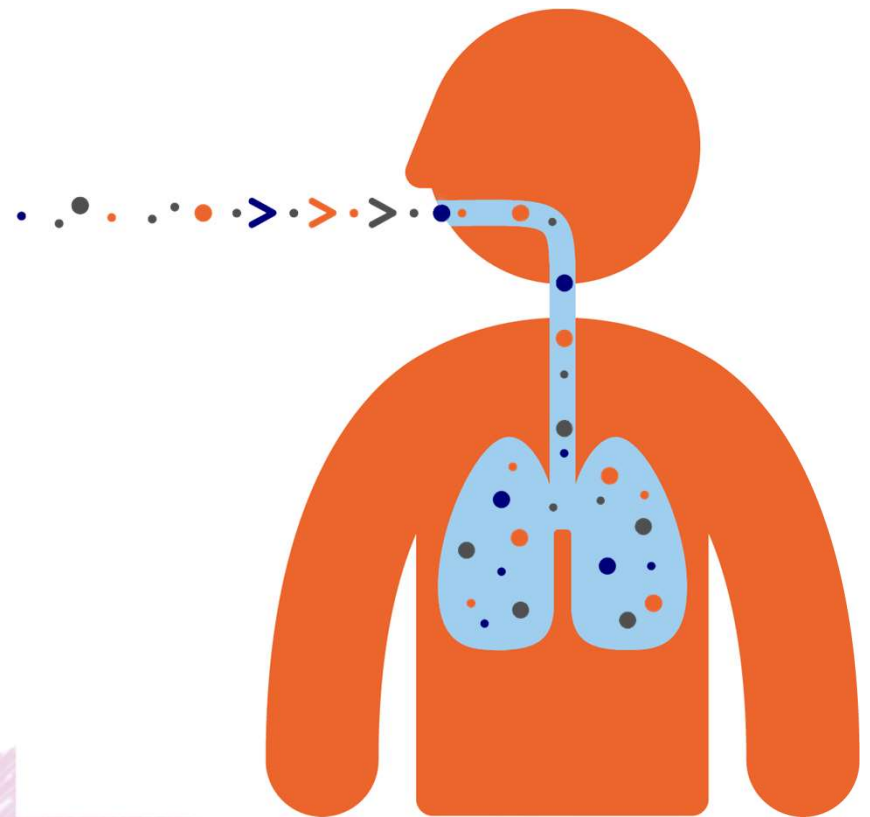
What do you
know about
air pollution?



Air pollution is in the air that we breathe in.

The particles and gases enter our bodies and can damage our health and physical and mental development.

Air pollution can be indoors and outdoors...



Indoor air pollution is caused by things like...

Cooking - gases and particles are released when food is cooked.



Personal care products like shower gels and body sprays also release VOCs.



Chemicals in cleaning products or craft materials, that are released into the air. These harmful gases are called volatile organic compounds (VOC).

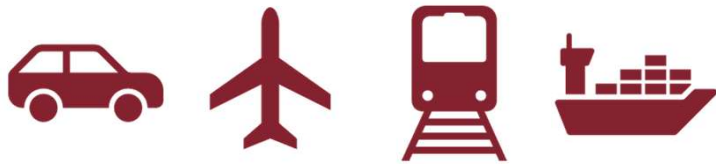


Dust, mould and bacteria.



Outdoor air pollution is caused by things like...

Vehicles such as cars, vans, trains, ships and planes release gases (e.g. nitrogen dioxide & carbon monoxide) and particulate matter (in soot) into the air.



Farming often has a lot of animal waste and uses fertilisers and pesticides (chemicals) to help food grow, all of which can cause pollution.



Factories that make things such as food, clothes and toys and **power stations** that generate energy by burning fossil fuels, release harmful gases and particulate matter.



Burning fuel such as wood and coal to heat homes releases harmful gases and particulate matter.



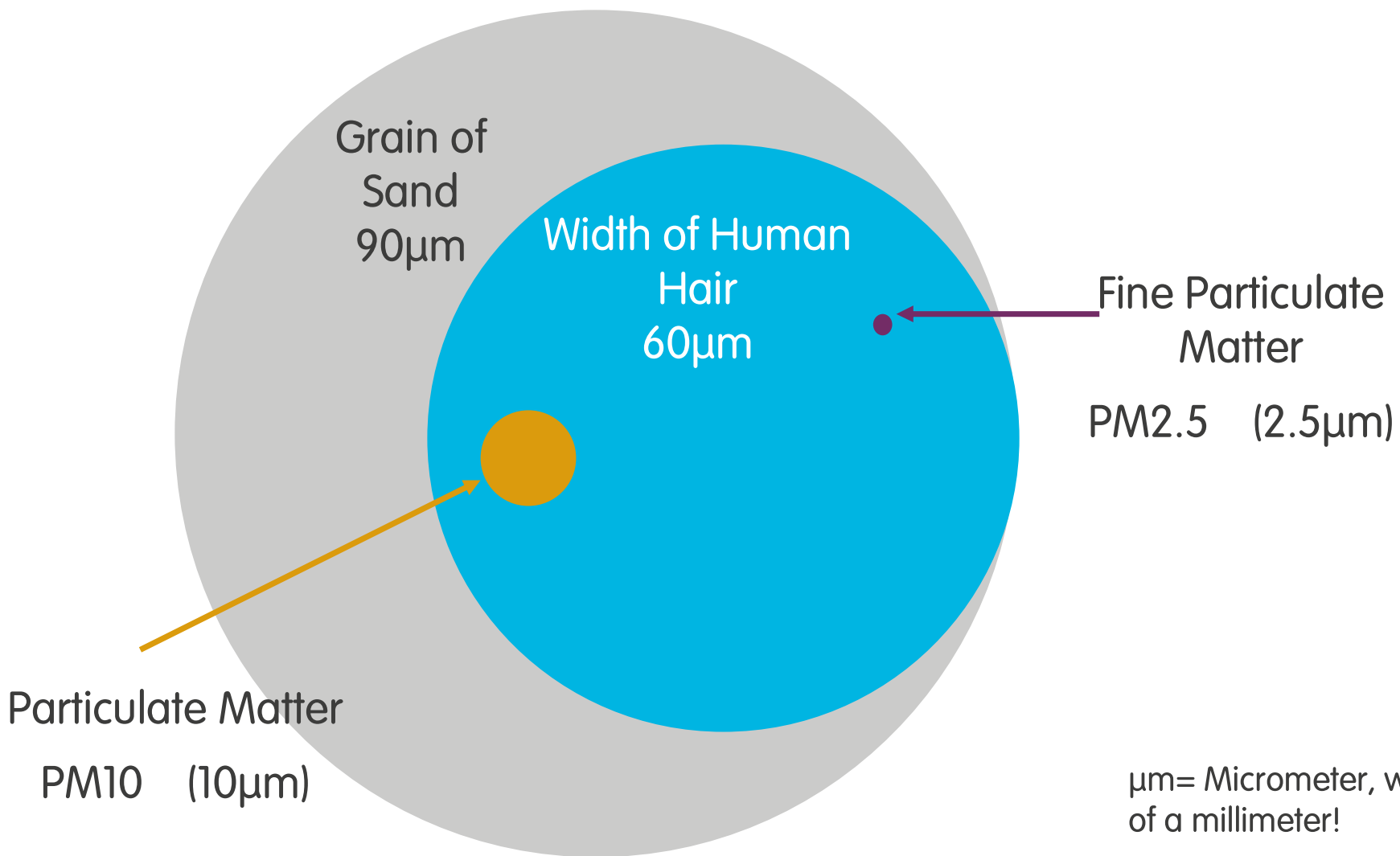
The particles in the air are called particulate matter (PM)

The air carries some **tiny tiny tiny tiny** particles, so we can't always see them!

Some particles, known as **PM10**, are **10 times smaller** than a grain of sand!!

Even smaller are **PM2.5**, which are **40 times smaller** than a grain of sand!

PM = Particulate Matter



μm = Micrometer, which is one-thousandth of a millimeter!

Particles all around us?

Examples of PM10

Sea Salt
Pollen
Heavier dust
Mould
Bacteria

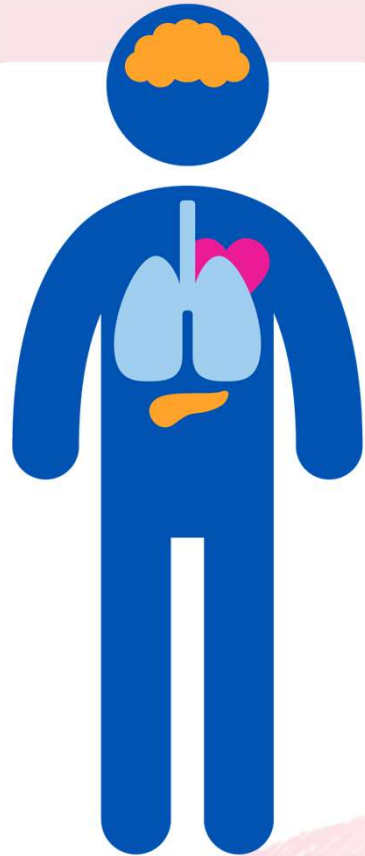


These are quite irritating! They can cause hay fever, sneezing and coughing.

Examples of PM2.5

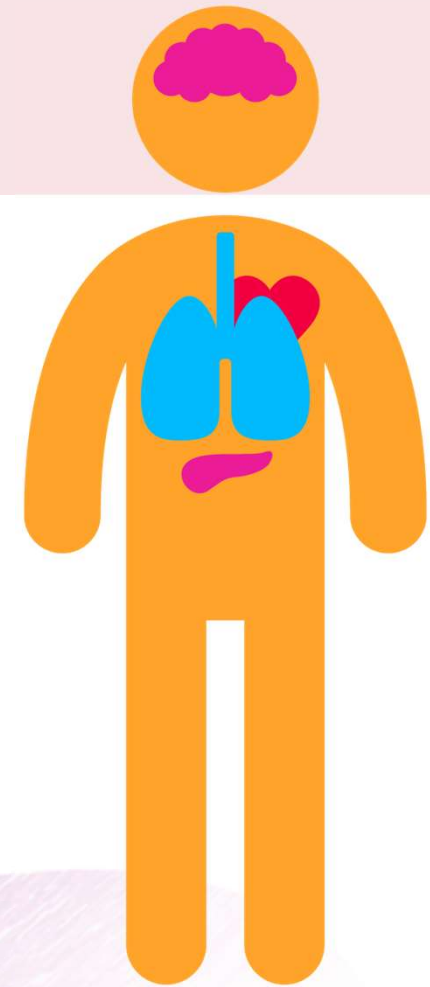
Soot
Cat allergens
Viruses
House dust mite
Tobacco smoke

These can seriously damage our health and development – especially our brains, hearts and lungs!

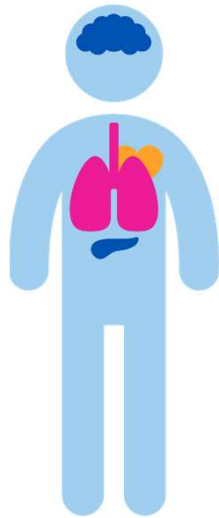


Any amount of air pollution can be damaging to our health and physical and mental development, but the more that you are exposed to, the bigger the risk and the larger the impact it can have.

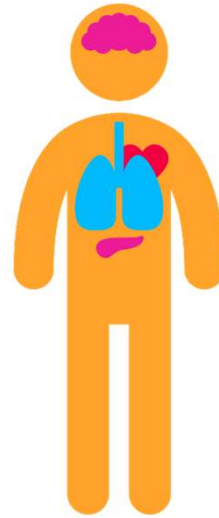
Can you think of ways that air pollution might affect your physical and mental development and health?



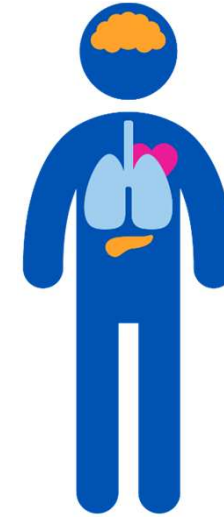
How does air pollution affect us?



Air pollution can damage your **lungs**. It can impact your breathing, can cause respiratory diseases (e.g. asthma) or make symptoms worse.



Exposure to air pollution can affect your **brain** and therefore your ability to **learn** and your **mental health**. There is also emerging evidence on the link between air pollution and worse cognitive functions, such as memory, and increased risk of dementia.



Air pollution can impact your **heart**. It causes heart disease and other coronary (heart) related problems. Every year, air pollution is estimated to contribute towards up to 36,000 deaths in the UK .

In Los Angeles...

- Has been ranked for having the worst air pollution in the United States many years in a row.
- The amount of PM 2.5 in the air is high. This type of air pollution can seriously damage our health and development – especially our brains, hearts and lungs!
- More than 900,000 children are diagnosed with asthma in LA County.
- Communities near ports and industrial areas often have higher levels of PM 2.5 than others.





In California...



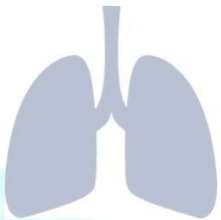
7 OF 10

most ozone-polluted cities in the U.S. are in California



1 MILLION

annual California student school absences related to air pollution



4 TIMES AS LIKELY

Californians are to experience serious air pollution-related health problems



What do you notice about PM 2.5 levels around the world? Why does this matter?



Beijing, China

42.1 $\mu\text{g}/\text{m}^3$



Delhi, India

98.6 $\mu\text{g}/\text{m}^3$



London, UK

11.4 $\mu\text{g}/\text{m}^3$



Los Angeles, USA

12.7 $\mu\text{g}/\text{m}^3$

$\mu\text{g}/\text{m}^3$ = micrograms per one cubic meter of air

The safe limit is 10 $\mu\text{g}/\text{m}^3$.

What can we do to make sure we have cleaner air?

We can all help to make sure the air around us is cleaner.

Can you think of some ideas?

At home...



- Open windows to let the fresh air in – especially when
 - cooking
 - or cleaning
- Use fragrance-free milder cleaning and personal care products.

When travelling to places...



- Walk, cycle, scoot or take public transport whenever you can instead of using your car.
- Don't idle – ask your parents/adults to turn off their engines when the car isn't moving.

What can
you do to
make sure
we have
cleaner air?

What can
we do to
make sure
we have
cleaner air?

What can
everybody
do to make
sure we
have
cleaner air?

The logo features a stylized sunburst or fan shape on the left, composed of several curved lines in shades of brown and blue. To its right, the words "CALIFORNIA" and "CLEAN AIR DAY" are stacked in a blue, sans-serif font.

CALIFORNIA CLEAN AIR DAY

A PROJECT OF THE COALITION FOR CLEAN AIR

OCTOBER 6, 2021





To get involved in California Clean Air Day, you could take the clean air pledge for kids!

www.cleanairday.org/pledge/kids/

CLEAN AIR PLEDGE FOR KIDS



Bike to school, the store or a park



Plant a tree



Tell my parents to turn off the car when idling



Walk to school, the store or a park



Tell my parents to turn off the car when idling



Give a report to my class on the environment



Grow a seed or plant a garden



Give a report to my class on the environment



Do an air quality experiment



Make a craft or art project about air quality to raise awareness

Activity 1: Design your own 'clean air future' vision

- Using the information from today's lesson and your own research, design your own clean air vision for the future.
- **Some things to think about to help you come up with ideas:**
 - Why clean air is so important for your physical and mental development and health
 - What we can all do to make sure we have cleaner air, both indoors and outdoors
 - What the air quality is like in your city now (both indoors and outdoors)
 - How and why you'd like this to change in the future
 - Who can help, to make sure we all have cleaner air
 - What a great clean air future vision would look/be like for you
- **You can present your work in the way that inspires you the most. For example, you could choose to do:**
 - A written piece e.g. real/fictional letter, poem, song, story, personal account...
 - A visual piece e.g. artwork, photos, videos...

Activity 2: What solutions exist around the world?

You are going to have a class debate to help you find out more about different types of solutions that exist around the world!

Debate:

- What is the most effective way of making sure your city has cleaner air?
- Which action(s) will you prioritise?

Debate!

- You each have a short description of an action that can help us have cleaner air. Some of you may have the same one.
- Read the information and then share it with your partner.
- Then get ready to share it with the class.
- Persuade your class by explaining why you think this is the best action for a city to take.
- Listen closely to others and their ideas, they might persuade you!

What type of action did you have?

<p>Legislation (laws) and advice, e.g.:</p> <ul style="list-style-type: none">- Government- United Nations	<p>Financial incentives and penalties, e.g.:</p> <ul style="list-style-type: none">- Charges to travel on certain roads (penalties)- Fines for businesses who are high polluters (penalties)- Giving people money towards more sustainable transport such as bicycles (incentives)	<p>Changes to infrastructure, e.g.:</p> <ul style="list-style-type: none">- Cycle lanes- Better ventilation systems in buildings- Improving public transport- Digital solutions to help people travel more sustainably- Schools and businesses making it easy and safe for people to travel sustainably (e.g. bike parks)- Schools working with the council to have school streets
<p>Innovations in transport, e.g.:</p> <ul style="list-style-type: none">- Electric and low emission vehicles- New alternative low polluting transport systems	<p>Behavior change, e.g.:</p> <ul style="list-style-type: none">- Walking, cycling, scooting to school or work- Choosing chemical and fragrance-free cleaning and personal care products- Opening windows, especially when cooking and cleaning	<p>Campaigning, e.g.:</p> <ul style="list-style-type: none">- Raising awareness with others- Signing a petition- Asking leaders in schools, businesses and the local community to come together to help tackle air pollution- Calling on the organizations like the UN to make changes that will benefit all

What are the best actions? Why?

Which solution(s) can you influence? How?

<p>Legislation (laws) and advice, e.g.:</p> <ul style="list-style-type: none">- Government- United Nations	<p>Financial incentives and penalties, e.g.:</p> <ul style="list-style-type: none">- Charges to travel on certain roads (penalties)- Fines for businesses who are high polluters (penalties)- Giving people money towards more sustainable transport such as bicycles (incentives)	<p>Changes to infrastructure, e.g.:</p> <ul style="list-style-type: none">- Cycle lanes- Better ventilation systems in buildings- Improving public transport- Digital solutions to help people travel more sustainably- Schools and businesses making it easy and safe for people to travel sustainably (e.g. bike parks)- Schools working with the council to have school streets
<p>Innovations in transport, e.g.:</p> <ul style="list-style-type: none">- Electric and low emission vehicles- New alternative low polluting transport systems	<p>Behaviour change, e.g.:</p> <ul style="list-style-type: none">- Walking, cycling, scooting to school or work- Choosing chemical and fragrance-free cleaning and personal care products- Opening windows, especially when cooking and cleaning	<p>Campaigning, e.g.:</p> <ul style="list-style-type: none">- Raising awareness with others- Signing a petition- Asking leaders in schools, businesses and the local community to come together to help tackle air pollution- Calling on the organizations like the UN to make changes that will benefit all

Debate!

- What is the most effective way of making sure your city has cleaner air?
- Which action(s) will you prioritise? Why?

Together, we can work
towards having cleaner air.

Let's think about how else we
can do that...

Who can you tell about cleaner air?

- Who influences you?
- Who can you influence?
- How far can you reach?

Whose job is
it to protect
your air?

What do you think those
people should be doing to
protect your clean air?

Do you think they are doing
what they should be doing?

One important thing we
can do is to make sure that
Clean Air becomes an
explicit right!

A young girl with curly hair, wearing a striped shirt and blue shorts, is smiling on a colorful playground. The playground has red and blue sections with white lines. The text is overlaid on the left side of the image.

The United
Nations
Convention on
the
Rights of the
Child (UNCRC)

Article 24

1. States Parties recognize the right of the child to the enjoyment of the highest attainable standard of health and to facilities for the treatment of illness and rehabilitation of health. States Parties shall strive to ensure that no child is deprived of his or her right of access to such **health care services**.

2. States Parties shall pursue full implementation of this right and, in particular, shall take appropriate measures:

(a) To diminish infant and child mortality;

(b) To ensure the provision of necessary medical assistance and health care to all children with emphasis on the development of primary health care;

(c) To combat disease and malnutrition, including within the framework of primary health care, through *inter alia*, the application of readily available technology and through the provision of adequate **nutritious foods** and **clean drinking-water**, taking into consideration the dangers and risks of **environmental pollution**;

(d) To ensure appropriate pre-natal and post-natal health care for mothers;

(e) To ensure that all segments of society, in particular parents and children, are informed, have access to **education** and are supported in the use of basic knowledge of child health and nutrition, the advantages of breastfeeding, **hygiene and environmental sanitation** and the prevention of accidents;

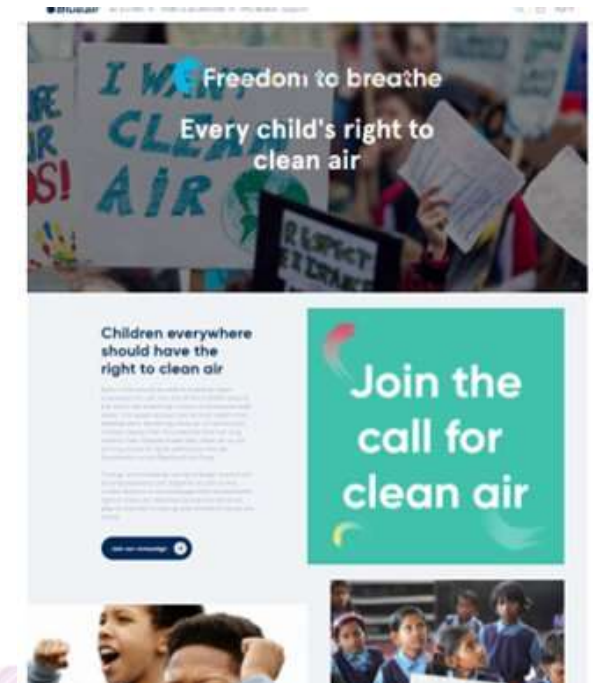
(f) To develop preventive health care, guidance for parents and family planning education and services.

3. States Parties shall take all effective and appropriate measures with a view to abolishing traditional practices prejudicial to the health of children.

4. States Parties undertake to promote and encourage international co-operation with a view to achieving progressively the full realization of the right recognized in the present article. In this regard, particular account shall be taken of the needs of developing countries.

The UNCRC does not explicitly state Clean Air should be a right.

- Do you think it should?
- Raise your hand if you agree.
- Your teachers will make sure that the right people know you think clean air should be a clear right, by adding the number of children who voted 'yes' to <https://www.blueair.com/us/freedomtobreathe.html>



What happens next?

- 20,000 children calling for the Right to Clean Air all over the world – starting in Beijing, Delhi, London & Los Angeles!
- Event in November bringing together the children's voices to the UN
- Your ideas are really important – we'd love to know what they are so we can help you share them with the UN! Examples might include:
 - Stories, poems, letters, songs
 - Artwork
 - Videos or photography (of actions and places, not people)

Please ask your teacher to share your work with us via email:
freedomtobreathe@ccair.org



Freedom to breathe