

Workshop timings

Start time	Duration	Description
0.00	5 mins	Welcome students and give each student a 'What's in our air' card. Introduce who you are and why you are here. Take off 9 for baddies and Ar/CO ₂ , then 20% oxygen, 80% nitrogen (1 oxygen for every 4 nitrogens).
0.05	3 mins	What do we know about air? Introduce the senses? Can we see/feel/hear/smell/taste it? Why is it important? Think about blowing up a balloon.
0.08	10 mins	What is in our air? Introduce the fact we have goodies and baddies in our air – and we're going to need their help to identify what's good and should be there, and what's bad and where it has come from. Goodies: Ask the students with the Oxygen/Nitrogen and Argon/CO ₂ cards to stand up. Explain that these are the goodies in our air – mostly its made up of Nitrogen (count the nitrogen students) with around 21% oxygen (count the oxygen students) and a tiny bit of Argon/CO ₂ (just one person). What do the goodies smell like and look like? Baddies: Ask the students with anything else on their cards to stand up. Ask these students to put their hands up if their pollutant has a smell – what are these? Now ask them to put their hands up if they have a colour – what sort? Not ask them to put their hands up if they have no smell or no colour – say that we can't always see or smell pollution in our air.
0.18	7 mins	Where do the baddies come from? Tell students that we have a list of suspects that may be polluting our air. We need them to think about whether these suspects are guilty or not guilty. This can be done with going from one side of the classroom to the other, standing up/down, thumbs up/down – judge the space and the energy of students.
0.25	10 mins	Who are the victims of air pollution? Explain that when we breathe in air, we breathe in the goodies and the baddies, some of which are really bad for us. Our bodies are designed to catch as many of these baddies as possible...we're going to look at how it does this. Show the students the bottles with different particle sizes in them – explain that the large particles are things like dust or pollen, the next size down are particulate matter, from exhausts, and the smallest are fine particulate matter. Next explain that we have some sieves with us that are going to help us illustrate how these particles are filtered in our body. Explain that the biggest sieve is like our nose hairs – these will catch the biggest. The next sieve is like our lungs – these will catch the medium sized particles. But the smallest particles can get through both of these barriers and into our blood which isn't good for us.
0.35	7 mins	How small are these teeny tiny particles? Explain that within that tiny grain of sand, they could fit 40 particles of PM _{2.5} – that's how small they are.
0.42	7 mins	Why is this so bad? Explain that when particles get into our bodies, our lungs and airways try to protect us from these baddies and one way they do this is through inflammation – this is a defence mechanism but for people with asthma this goes into overdrive and the swelling also makes it hard for us to breathe.

		Ask for a volunteer (or two) to come and help us with an experiment – breathe through the straw, then to pinch the straw and try again. Describe to the class how it feels.
0.49	10 mins	Solving the crime Hand out the source and solution packs – this is best in groups of 3 or 4. Explain that they need to first sort out the sources of pollution from the solutions. Next they need to match these up, remembering that some sources may have multiple solutions. Get feedback from some of the groups.
0.59	5 mins	Introducing the purifier Explain that it is always best to limit the amount of pollution we are producing and try and avoid our exposure to this through everyday changes but that also there is technology that can help us with this. Introduce the air purifier and explain it will be on and off over the next 10 weeks. Suggest they name their purifier?
1.04	21 mins	Designing a poster Ask students to choose one of the solutions from their card pack and to design a poster that tells other students what the problem is and how they can solve it.
1.25	5 mins	Pledge card Hand out the pledge cards and ask students to think about what they have learnt and think about what they are going to do to reduce their contribution or exposure to air pollution. Ask them to take the leaflets home to their parents to tell them about their workshop today.

Workshop materials: Laptop & charger USB with presentation Sieves x2 Tray Stones/pebbles/sand mixture Stones/pebbles/sand in bottles Paper plates Smelly spray Jumbo paper straw Pledge cards Source & solution cards What's in our air cards Guilty/not guilty signs	Lesson resources: Printed guide & lesson plans Printed logbook 30 x paper bags 30 x paper straws
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Source and Solution Card Answers	
Source	Solutions
Exhaust fumes from cars and other vehicles	Walk, cycle or scoot
	Car share with others
	Organise a 'walking bus'
	Turn off engines when the vehicle is not moving
	Use eco-friendly lightbulbs

Burning fossil fuels to power and heat our homes, schools and businesses	Switch off all appliances when not in use
	Switch off all lights when no one is in the room
Build-up of dust on surfaces and in carpets	Clean and vacuum regularly
Disposing of our waste through landfill sites and burning releases chemicals into the air	Recycling waste when possible
Mould on walls and ceilings release harmful particles	Opening windows to allow moist air out
Smoke is released from wood burning stoves or open fires	Using dried out wood so it burns effectively
Chemicals in cleaning products and paints are released into the air	Use gel cleaning products rather than sprays
Fertilisers added to crops release chemicals into the air	Purchase organic produce