

## **Expert Pack: Breathing Deep**

Lexile Range: 950-1140

### **Topic/Subject:**

What can we learn about air pollution and its effects on humans?

### **Texts/Resources**

#### Articles

1. "Outdoor Air Pollution"
2. "Let's Talk About...Indoor Air"
3. "Air Pollution" – Family Doctor
4. "Air Pollution" – World Book
5. "The Effects of Common Air Pollutants"

### **Rationale and Suggested Sequence for Reading**

In the first text Outdoor Pollution students get a very basic introduction to what air pollution is, where it comes from and how it can affect health. The next text, "Let's Talk About...Indoor Air", helps students realize that indoor air can be become polluted just as outdoor air can. In "Air Pollution", from familydoctor.org, students learn more specifically about the symptoms that air pollution can cause, why it's bad for your health, who monitors air pollution, and what you can do to protect your family and yourself. The next text, also called "Air Pollution" by World Book, sums up everything we have talked about already and goes a little more in depth and also about regulations. Lastly, the poster, "The Effects of Common Air Pollutants", gives students a comprehensive look at both the respiratory effects and the cardiovascular effects of air pollutants as well as an AQI chart to use in identifying air quality index numbers and what they mean in terms of the actions people should take as precautions depending on the number indicated.

### **The Common Core Shifts for ELA/Literacy**

1. Regular practice with *complex text* and its academic language
2. Reading, writing and speaking grounded in *evidence* from text, both literary and informational
3. Building *knowledge* through content-rich nonfiction

### **College and Career Readiness Anchor Standards for Reading Literary and/or Informational Texts**

1. *Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.*
2. *Determine central ideas or themes of a text and analyze their development; summarize*

the key supporting details and ideas.

10. Read and comprehend complex literary and informational texts independently and proficiently.

### Annotated Bibliography

#### **970L “Outdoor Air Pollution”**

Author: National Library of Medicine, Environmental Health Student Portal

Genre: Informational

Length: 191 words

Synopsis: Tells about where air pollution comes from and how it can affect your health

Citation: “Outdoor Air Pollution, Environmental Health Student Portal.” *U.S. National Library of Congress*. National Institutes of Health. N.d. Web. 15 Feb. 2017. From <https://kidsenvirohealth.nlm.nih.gov/subtopic/001/air-pollution/025/outdoor-air-pollution/>

Cost/Access: \$0.00

Recommended Student Activities: Wonderings

#### **950L “Let’s Talk About...Indoor Air”**

Author: National Institute of Environmental Health Sciences

Genre: Informational

Length: 476 words

Synopsis: This text describes how indoor air can become polluted or spoiled by adding harmful things to it and what can happen to people who breathe this air. It also tells what we can do to keep the inside air we breathe clean.

Citation: “Let’s Talk about...Indoor Air.” National Institutes of Health. *U.S. Department of Health and Human Services*. n.d. Web. 15 Feb. 2017. From <https://kids.niehs.nih.gov/topics/pollution/air/talk-about-air/index.htm>

Recommended Student Activities: Picture of Knowledge

#### **1120L “Air Pollution”**

Author: Familydoctor.org

Genre: Informational

Length: 697 words

Synopsis: This article explains what air pollution is made up of, the symptoms air pollution can cause, how it can be bad for your health, and what agency exists to monitor it.

Citation: Staff, Familydoctor.org Editorial. “Air Pollution.” Familydoctor.org. N.d. 04 Jan. 2017. Web. 15 Feb. 2017.

Recommended Student Activities: Picture of Knowledge

**1104L “Air Pollution”**

Author: World Book

Genre: Informational

Length: 1375 words

Synopsis: This article describes what air pollution is, sources of it, how pollution affects your health and ways to control and regulate it.

Citation: Air Pollution. *World Book*. Retrieved January 7, 2017, from

<http://www.worldbookonline.com/student/article?id=ar009160&st=air+pollution#tab=homepage>

Recommended Student Activities: Wonderings

**N/A The Effects of Common Air Pollutants**

Author: US EPA

Genre: Informational Poster

Length: 150 words

Synopsis: Lists both respiratory and cardiovascular effects of air pollution.

Citation: Retrieved January 2, 2017, from <https://www3.epa.gov/airnow/health-prof/common-air-pollutants-2011-lo.pdf>

Recommended Student Activities: PopQuiz

## Supports for Struggling Students

By design, the **gradation of complexity** within each Expert Pack is a technique that provides struggling readers the opportunity to read more complex texts. Listed below are other measures of support that can be used when necessary.

- Provide a brief **student-friendly glossary** of some of the academic vocabulary (tier 2) and domain vocabulary (tier 3) essential to understanding the text
- Download the Wordsmyth widget to classroom computers/tablets for students to access student-friendly definitions for unknown words. <http://www.wordsmyth.net/?mode=widget>
- Provide brief **student friendly explanations** of necessary background knowledge
- Include **pictures or videos** related to the topic within and in addition to the set of resources in the pack
- Select a small number of texts to **read aloud** with some discussion about vocabulary work and background knowledge
- Provide **audio recordings** of the texts being read by a strong reader (teacher, parent, etc.)
- **Chunk the text** and provide brief questions for each chunk of text to be answered *before* students go on to the next chunk of text
- Pre-reading activities that focus on the **structure and graphic elements** of the text
- Provide **volunteer helpers** from the school community during independent reading time.

### Why Text Sets Support English Language Learners

Those acquiring English as a second language have to learn many words in English to catch up with their English-only peers. Vocabulary builds at a much quicker pace when reading a set of connected texts. Text sets are an adaptable resource perfect for building knowledge and vocabulary. Student use of text sets can vary in terms of independence or teacher supports based on the individual needs of the students in the room. Activities found within the text set resources reflect several best practices for English Language Learner instruction including:

- Providing brief, engaging texts that provide a high volume of reading on a topic.
- Providing web-based resources and/or videos that are tied to the content of the texts students are reading.
- Providing opportunities for students to learn new vocabulary through the use of student-friendly definitions in resource-specific glossaries.
- Allowing for options to reinforce newly learned vocabulary and/or content through graphic organizers.
- Providing opportunities for students to reinforce new vocabulary through multi-modal activities including written work, group discussion, viewing visual content, and reading texts that feature the vocabulary.

Teachers of ELLs may use the protocols on the following pages to provide additional support to students who are struggling to access the content within text sets because they are new to English.

## ELL Text Set Protocol Grades 3-12

The goal of text sets is to help students build knowledge through a volume of independent reading, and it is important that educators provide scaffolds to allow English Language Learners to be successful in engaging meaningfully with the texts, even as students are still developing English language skills. The protocol below can be used for teaching with text set resources as a full class. Students can also be trained on the protocol so that they can utilize text sets in small groups or partnerships as a resource for independent or reciprocal reading and study.

Please note that this protocol includes options for teachers. Individual decisions should be made considering the needs of the students and the demands of the content, keeping in mind that the goal of each scaffold is to allow students to meaningfully access the text and move toward independent, knowledge-building reading.

### **Step one: Build knowledge and vocabulary.**

Introduce students to the overall topic/content of the text set, including knowledge demands needed to engage in the content, and domain-specific vocabulary necessary for comprehension. This should be done prior to engaging with the texts themselves; time allotted to this activity should reflect student needs (anywhere from 5 minutes prior to reading, to a full day's lesson is appropriate).

*Options for this step include:*

- Engage students in reading and discussing auxiliary texts (of lesser complexity) and resources (illustrations, photographs, video clips) on the topic of the text set.
- Pre-teach a few key content-specific terms prior to students engaging with a text set. (Ideas for text-focused vocabulary instruction can be found [here](#).)
- Provide the student-friendly glossary included in the text set prior to reading each text.
- When possible, allow students to read texts in their home language about the topic under study.

### **Step two: Read text orally.**

Focusing on one resource at a time, allow students to listen to a fluent read of the resource, while following along with their own copy of the text.

*Options for this step include:*

- Have a fluent reader model the first read of a text or resource.
- Have students engage in a buddy/partner read.
- Use recordings of the text to provide additional opportunities to hear expert reading.

### **Step three: Engage in group discussion about the content.**

Allow students time in partnerships or small groups to discuss the content of the resource.

*Options for this step include:*

- Allow for discussion/conversation (in the students' home language if possible) with a small group of students reading the same text set prior to writing or provide heterogeneous language groupings to talk about content and discuss what students are learning.
- Have students refer to the student-friendly glossary included with each text set to identify meanings for new vocabulary necessary for comprehension.

### **Step four: Write about what was read.**

*Options for this step include:*

- Use the "Rolling Knowledge Journal" and/or "Rolling Vocabulary Journal" as a shared writing routine/graphic organizer to help to scaffold the writing process and capture student knowledge over time.

- Provide students with several supports to help students engage in writing/drawing about what they read:
  - Use mentor texts about which students can pattern their writing.
  - Allow them to write collaboratively.
  - Show students visual resources as prompts, etc.
  - Provide language supports such as strategically chosen sentence starters.

**Repeat steps one through four with each resource in the text set as appropriate.**

## Expert Pack: Breathing Deep

### **Learning Worth Remembering**

**Cumulative Activities** – The following activities should be completed and updated after reading each resource in the set. The purpose of these activities is to capture knowledge building from one resource to the next, and to provide a holistic snapshot of central ideas of the content covered in the expert pack. *It is recommended that students are **required** to complete one of the Cumulative Activities (Rolling Knowledge Journal or Rolling Vocabulary) for this Expert Pack.*

#### **1. Rolling Knowledge Journal**

- Read each selection in the set, one at a time.
- After you read *each* resource, stop and think what the big learning was. What did you learn that was *new and important* about the topic from *this* resource? Write or list what you learned from the text about (topic).
- Then write or list how this new resource added to what you learned from the last resource(s).

#### **Sample Student Response:**

Title	Write or List	
	New and important learning about the topic	How does this resource add to what I learned already?
1. "Outdoor Air Pollution"	Smog is air pollution. Sometimes air pollution is invisible. Both natural things and humans can cause air pollution. The clean air act is a law that sets limits on common air pollutants released.	
2. "Let's Talk About...Indoor Air"	We are exposed to more indoor pollution than outdoor pollution because we spend a lot of time indoors. Keeping doors and windows closed can trap pollution inside.	There is more than just outdoor pollution.  There are ways to keep us safe both outdoors and indoors.
3. "Air Pollution" – Family Doctor	Pollution is made up of gases, droplets, and particles. Air can be polluted in the city and the	Air pollution is everywhere not just in the city. The parts you can't see are made up of called

	<p>country. There are many symptoms that people can have that are caused by air pollution.</p>	<p>gases, droplets and particles.</p> <p>You can protect yourself by staying indoors if the outdoor air is too polluted. You can use filters to filter out the particles indoors.</p>
<p>4. "Air Pollution" – World Book</p>	<p>There are laws to control air pollution. In 1967 there was the Air Quality Act and in 1970 there was another called Clear Air Act. The laws in effect have been generally successful.</p>	<p>The effects of air pollution were so great that laws and regulations needed to be passed in order to control them.</p>
<p>5. "The Effects of Common Air Pollutants"</p>	<p>Air pollution can affect your breathing and your heart function.</p> <p>You can get sick from breathing bad air.</p> <p>You can get asthma, bronchitis, emphysema, pneumonia, heart disease, stroke and heart failure.</p>	<p>Breathing polluted air can make you really sick.</p> <p>The AQI can help you to see if it's safe to go outside and tell you ways to stay safe.</p>



## 2. Rolling Vocabulary: “Sensational Six”

- Read each resource then determine the 6 words from each text that most exemplify the central idea of the text.
- Next use your 6 words to write about the most important idea of the text. You should have as many sentences as you do words.
- Continue this activity with EACH selection in the Expert Pack.
- After reading all the selections in the Expert Pack, go back and review your words.
- Now select the “Sensational Six” words from ALL the word lists.
- Use the “Sensational Six” words to summarize the most important learning from this Expert Pack.

Title	Six Vocabulary Words & Sentences
“Outdoor Air Pollution”	<p>Words: smog, pollutants, released, symptoms, invisible, factors</p> <ol style="list-style-type: none"> <li>1. I could see the <u>smog</u> hanging over the city.</li> <li>2. Humans often add <u>pollutants</u> into the air.</li> <li>3. Some pollutants are <u>released</u> into the air by factories.</li> <li>4. Breathing bad air can cause <u>symptoms</u> of asthma.</li> <li>5. Even when pollution is <u>invisible</u> and you can’t see it, it can be harmful to us.</li> <li>6. There are many <u>factors</u> that cause polluted air.</li> </ol>
“Let’s Talk About...Indoor Air”	<p>Words: exhaust, fibers, allergic, reduce, chemicals, unhealthy</p> <ol style="list-style-type: none"> <li>1. The <u>exhaust</u> from your car can make our air dirty.</li> <li>2. Small <u>fibers</u> from material can get into the air and make it hard to breathe.</li> <li>3. Some people are <u>allergic</u> to things in dust and it makes them sneeze.</li> <li>4. Putting filters in our heating systems can help <u>reduce</u> dust in the air.</li> <li>5. Some factories put harmful <u>chemicals</u> into the air.</li> <li>6. Breathing polluted air is very <u>unhealthy</u>.</li> </ol>
“Air Pollution” – Family Doctor	<p>Words: droplets, particles, ozone, AQI (Air Quality Index), irritate, exposure</p> <ol style="list-style-type: none"> <li>1. A <u>droplet</u> of water ran down the window.</li> <li>2. There is a <u>particle</u> of dirt on your glasses.</li> <li>3. Ground <u>ozone</u> causes most of the pollution in cities.</li> <li>4. When the <u>AQI</u> is above 100 you should be careful.</li> <li>5. Smog can <u>irritate</u> your eyes and make them itchy.</li> <li>6. You can get very sick if you are <u>exposed</u> to too much air pollution.</li> </ol>

<p>“Air Pollution”- World Book</p>	<p>Words: pollutants, dilute, hydrocarbons, radon, regulations, motor-vehicle emissions</p> <ol style="list-style-type: none"> <li>1. <u>Pollutants</u> can make the air harmful and effect our health.</li> <li>2. Trees can help <u>dilute</u> the air pollution and remove pollutants.</li> <li>3. <u>Hydrocarbons</u> are a mixture of hydrogen and carbon which pollute the air.</li> <li>4. <u>Radon</u> is a gas that comes from soil and rocks, in large amounts it is known to cause lung cancer.</li> <li>5. Rules to follow, known as <u>regulations</u>, were set by the government to control air pollution.</li> <li>6. Cars also release harmful pollutants into the air which are called <u>motor-vehicle emissions</u>.</li> </ol>
<p>“The Effects of Common Air Pollutants”</p>	<p>Words: respiratory, cardiovascular, function, premature, palpitate, fatigue</p> <ol style="list-style-type: none"> <li>1. Your lungs are part of your <u>respiratory</u> system.</li> <li>2. Your heart is part of your <u>cardiovascular</u> system.</li> <li>3. Your lungs do not <u>function</u> well without clean air.</li> <li>4. The <u>premature</u> guests arrived before the party started.</li> <li>5. The shock of the surprise made my heart <u>palpitate</u>.</li> <li>6. <u>Fatigue</u> came to me quickly after the long run.</li> </ol>
<p><b>Sensational Six</b></p>	<p>Words: pollutants, unhealthy, particles, exposure, respiratory, reduce</p> <p>There are many harmful <b>particles</b> in the air that cause <b>pollutants</b>. Long <b>exposure</b> to these pollutants is <b>unhealthy</b> and can cause many types of diseases, like <b>respiratory</b> ones. It is important to find ways to <b>reduce</b> the amount of particles being put into the air.</p>

**Student Copy**

**1. Rolling Knowledge Journal**

- Read each selection in the set, one at a time.
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- Then write or list how this new resource added to what you learned from the last resource(s).

**Sample Response**

Title	Write or List	
	New and important learning about the topic	How does this resource add to what I learned already?

**2. Rolling Vocabulary: “Sensational Six”**

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- After reading all the selections in the Expert Pack, go back and review your words.
- Now select the “Sensational Six” words from ALL the word lists.
- Use the “Sensational Six” words to summarize the most important learning from this Expert Pack.

**Sample Response**

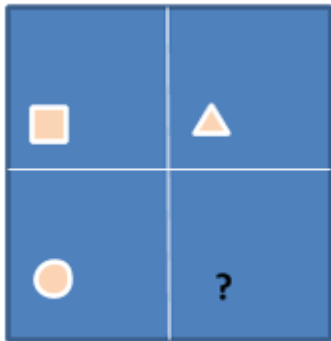
Title:	Six Vocabulary Words & Sentences
<b>Sensational Six</b>	Words:

### Learning Worth Remembering

**Singular Activities** – the following activities can be assigned for each resource in the set. The purpose of these activities is to check for understanding, capture knowledge gained, and provide variety of ways for students to interact with each individual resource. Students may complete some or none of the suggested singular activities for each text. Singular activities should be assigned at the discretion of the teacher.

#### 1. A Picture of Knowledge (Recommended for “Let’s Talk About Indoor Air,” “Air Pollution” – Family Doctor)

- Take a piece of paper and fold it two times: once across and once top to bottom so that it is divided into 4 quadrants.
- Draw these shapes in the corner of each quadrant.



1. Square
2. Triangle
3. Circle
4. Question Mark

- Write!

Square: What one thing did you read that was interesting to you?

Triangle: What one thing did you read that taught you something new?

Circle: What did you read that made you want to learn more about?

Question Mark: What is still confusing to you? What do you still wonder about?

- Find at least one classmate who has read [selection] and talk to each other about what you put in each quadrant.

**2. Quiz Maker** (Recommended for “The Effects of Common Air Pollutants”)

- Make a list of # questions that would make sure another student understood the information.
- Your classmates should be able to find the answer to the question from the resource.
- Include answers for each question.
- Include the where you can find the answer in the resource.

“The Effects of Common Air Pollutants”

Question	Answer

**3. Wonderings** (Recommended for “Outdoor Air Pollution,” “Air Pollution” – World Book)

I’m a little confused about:	This made me wonder:
<p>On the left, track things you don’t understand from the article.</p> <p><b>I am confused about or do not understand....</b></p>	<p>On the right side, list some things you still wonder (or wonder now) about this topic.</p> <p><b>I wonder or would like to learn more about....</b></p>

## Expert Pack: Breathing Deep

### Expert Pack Glossary

#### “Outdoor Air Pollution”

Word	Student-Friendly Definition
smog	A mixture of smoke and fog that is caused by moist air and human pollution. <i>Smog is a problem in many large cities.</i>
pollutants	Something that pollutes, esp. a waste substance that makes air, water, or land impure or unhealthy; contaminant. <i>Smoke is a pollutant that causes the air to be dirty.</i>
released	To set free or let go. <i>We released the tadpoles into the pond.</i>
symptoms	Something that happens in the body suggesting that there is a disease or disorder. <i>Fever is a symptom of the flu.</i>
invisible	Not able to be seen; not visible. <i>The house was invisible from the road.</i>
factors	Something that has an influence on something that happens or is one of the causes of it. <i>Our team was prepared to play in the snow, so the snowy weather was a big factor in their win.</i>

#### “Let’s Talk About...Indoor Air”

Word	Student-Friendly Definition
exhaust	The smoke or gas given off by an engine. <i>The exhaust from the old car filled the garage with smoke.</i>
fibers	A small, thin part of a plant, animal, or mineral that is shaped like a thread. <i>It is dangerous to breathe in asbestos fibers.</i>
allergic	Having an allergy that causes an unpleasant reaction. <i>Because she is allergic to cat hair, she will not enter their house.</i>
reduce	To make less in amount or size. <i>The new roads reduced traffic jams.</i>
chemicals	A substance used in or produced by a chemical process. <i>A substance made from chemicals is used to make some drinks taste sweet.</i>

unhealthy	Causing poor health or disease. <i>Smoking is an unhealthy habit.</i>
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### “Air Pollution” – Family Doctor

Word	Student-Friendly Definition
ozone	The gas found in smog. <i>Ozone pollution is cause from vehicles and factories.</i>
droplets	A small drop, as of water. <i>Droplets of water hung off the leaf.</i>
particles	A tiny amount or small piece; speck; trace. <i>There's a particle of dirt on your mirror.</i>
AQI	Air Quality Index <i>The AQI is 300. You should stay indoors today.</i>
exposure	The condition of being exposed to wind, cold, heat, rain, or other forces of nature. <i>The exposure of your skin to the sun can cause it to burn.</i>
irritate	To make sore, red, or raw; inflame. <i>The smoke irritated my eyes.</i>

### “Air Pollution” – World Book

Word	Student-Friendly Definition
aggravate	To make angry or bother <i>John was aggravated when Sam kept making fun of him.</i>
agriculture	Occupation that deals with soil, crops and livestock <i>Agriculture is the main industry in rural locations.</i>
Greenhouse effect	When radiation from a planet's atmosphere warms the planet's surface to a temperature above what it would be otherwise <i>In the past few years, we have felt a greenhouse effect because the Earth is getting warmer.</i>
source	The start or cause of something. <i>Not knowing the rules was the source of his trouble with the game.</i>
disease	A condition that causes harm to the health of a person, animal, or plant; illness; sickness. <i>Chicken pox is a contagious disease.</i>



**“The Effects of Common Air Pollutants”**

Word	Student-Friendly Definition
respiratory	Having to do with or used in the act of breathing. <i>The lungs are part of the respiratory system.</i>
cardiovascular	Of or pertaining to the heart and blood vessels. <i>Exercise is important for the health of the cardiovascular system.</i>
function	The purpose or role that an object or a person fulfills or is suited for. <i>The function of a fire fighter is to put out fires.</i>
premature	Done, happening, or born before the expected time; too soon. <i>The premature announcement of the team's win was embarrassing when the videotape showed that they lost.</i>
palpitate	Of the heart, to pulsate rapidly; flutter; quiver. <i>He could feel his heart palpitate as he hid in terror behind the curtain.</i>
fatigue	The condition of being tired in body or mind. <i>The hospital nurses are suffering from fatigue.</i>