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## Traffic pollution damages kids' lungs

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**2 February, 2007**

## THE ARTICLE

### **Traffic pollution damages kids' lungs**

Road pollution is a serious danger to children's health. That's the worrying conclusion of the longest and largest study\* ever undertaken into the effects of traffic fumes on child development. Researchers from the University of Southern California spent 13 years studying children who lived within 500 meters of busy highways. They found that most of the 3,600 children in the study had significantly weakened lungs. Researchers said this meant the children could have breathing problems for the rest of their lives. The main author of the study W. James Gauderman said: "Someone suffering a pollution-related deficit in lung function as a child will probably have less than healthy lungs all of his or her life." He added: "If you live in a high-pollution area and live near a busy road, you get a doubling of the damage."

Gauderman and his team conducted their research on youngsters who lived near busy roads. Once a year, the team measured the children's lung power. It checked how much air the children could release in one breath and how quickly it could be released. The team found that by their 18th birthday, children who lived within 500 meters of a highway exhaled three per cent less air compared with children who lived one-and-a-half kilometers away. Further, the highway children's lung power was seven per cent weaker in the rate at which they could exhale. Gauderman said that: "Even if you are in a relatively low regional pollution area, living near a road produces lung problems." About a third of the children moved away from busy roads during the study but stayed near the same community. Their lungs developed more healthily.

\*Study published in [The Lancet](#).

## WARM-UPS

**1. POLLUTION:** Brainstorm different types of pollution – your teacher will put them on the board. With your partner(s), talk about the pollution levels where you live / study / work. Change partners to report on previous partners.

**2. DICTATION:** The teacher will read the article slowly and clearly. Students will write down what they hear. The teacher will repeat the passage slowly again. With your partner(s) try to recreate the text.

Self correct your work. Compare your work with your partner(s) and try to recreate the full text. Listen again to check, fill in spaces or correct mistakes. Be honest with yourself on the number of errors. Advise the teacher of your total no of errors. Less than 5 - very good, 10 are acceptable. Any more is room for improvement! More than 20 - we need to do some work!

**3. READING:** Get students to read the passage aloud. Swap readers every paragraph.

**4. VOCABULARY:** Underline any words or phrases you do not understand. In groups, pool unknown words and use dictionaries to find their meanings.

**5. CHAT:** In pairs / groups, decide which of these topics or words from the article are most interesting (circle) and which are most boring (underline).

*Road pollution / children's health / traffic / Southern California / busy highways / researchers / lungs / air / lung problems / community / child development*

Have a chat about the topics you liked. For more conversation, change topics and partners frequently.

**6. QUICK DEBATE:** Students A believe scientists will find solutions to traffic pollution soon. Students B believe traffic pollution will get worse over the next 50 years – to dangerous levels. Debate this with your partners. Change partners often.

**7. TRAFFIC POLLUTION:** Spend one minute writing down all of the different words you associate with traffic pollution. Share your words with your partner(s) and talk about them. Together, put the words into different categories.

**8. THREE SENTENCES:** Choose six of these words. Write three sentences using two words in each. Try to associate them with the school leaving age. Discuss with your partner.

**9. SENTENCE STARTERS:** With your partner(s), finish these sentence starters. Change partner(s) and talk about the sentences you made.

- a) Road pollution \_\_\_\_\_
- b) Traffic fumes \_\_\_\_\_
- c) Highways \_\_\_\_\_
- d) Healthy lungs \_\_\_\_\_
- e) Noise pollution \_\_\_\_\_
- f) Being out of breath \_\_\_\_\_
- g) Eighteenth birthdays \_\_\_\_\_
- h) Pollution studies / reports \_\_\_\_\_

### 10. TOP TEN: POLLUTION

With your partner(s), think of ten different types of pollution. Fill in the table below.

1.	6.
2.	7.
3.	8.
4.	9.
5.	10.

Now list them from 1 to 10 – 1 being the worst, 10 the least damaging.

Discuss with your partner each type of pollution. Include the following questions...

What can be done to reduce this pollution? Where does it come from? How long has it been going on? What can you do to stop it? Add two questions of your own.

1 \_\_\_\_\_

2 \_\_\_\_\_

## BEFORE READING / LISTENING

**1. TRUE / FALSE:** Look at the article's headline and guess whether these sentences are true (T) or false (F):

- a. A study into pollution and children's lungs was the largest ever. T / F
- b. Researchers monitored different children for 30 years. T / F
- c. The survey found almost half of children studied had lung damage. T / F
- d. Living near a busy road doubles the chances of lung damage. T / F
- e. Researchers tested the children's lungs on a monthly basis. T / F
- f. Kids living 500 meters from busy roads had 30% less lung power. T / F
- g. Living near a road is still bad even if it's in a low pollution area. T / F
- h. Children who moved away from roads still suffered lung problems. T / F

**2. SYNONYM MATCH:** Match the following synonyms from the article:

- |                  |               |
|------------------|---------------|
| a. pollution     | determined    |
| b. children      | comparatively |
| c. fumes         | additionally  |
| d. significantly | breath out    |
| e. deficit       | emissions     |
| f. measured      | reduction     |
| g. exhale        | proportion    |
| h. further       | considerably  |
| i. rate          | youngsters    |
| j. relatively    | smog          |

**3. PHRASE MATCH:** Match the following phrases from the article (sometimes more than one combination is possible):

- |                                 |                                   |
|---------------------------------|-----------------------------------|
| a. Road pollution is a serious  | breathing problems                |
| b. Researchers from the         | danger to children's health       |
| c. ...children who lived within | University of Southern California |
| d. significantly                | lung power                        |
| e. Children could have          | low regional pollution area       |
| f. measured the children's      | which they could exhale           |
| g. how much air the children    | developed more healthily          |
| h. the rate at                  | 500 meters of busy highways       |
| i. a relatively                 | weakened lungs                    |
| j. Their lungs                  | could release in one breath       |

## WHILE READING / LISTENING

**GAP FILL:** Put the words in the column on the right into the gaps.

### Traffic pollution damages kids' lungs

Road \_\_\_\_\_ is a serious danger to children's \_\_\_\_\_. That's the worrying conclusion of the longest and largest study\* ever undertaken into the effects of traffic fumes on child \_\_\_\_\_. Researchers from the University of Southern California spent 13 years studying children who lived within 500 meters of busy highways. They found that most of the 3,600 children in the study had \_\_\_\_\_ weakened lungs. Researchers said this meant the children could have \_\_\_\_\_ problems for the rest of their lives. The main author of the study W. James Gauderman said: "Someone suffering a pollution-related \_\_\_\_\_ in lung function as a child will probably have less than healthy \_\_\_\_\_ all of his or her life." He added: "If you live in a high-pollution area and live near a busy road, you get a doubling of the \_\_\_\_\_."

Gauderman and his team conducted their \_\_\_\_\_ on youngsters who lived near busy roads. Once a year, the team measured the children's lung \_\_\_\_\_. It checked how much air the children could release in one breath and how quickly it could be released. The team found that by their 18th \_\_\_\_\_, children who lived within 500 meters of a highway \_\_\_\_\_ three per cent less air compared with children who lived one-and-a-half kilometers away. Further, the \_\_\_\_\_ children's lung power was seven per cent \_\_\_\_\_ in the rate at which they could exhale. Gauderman said that: "Even if you are in a relatively low \_\_\_\_\_ pollution area, living near a road produces lung problems." About a third of the children moved away from busy roads during the study but stayed near the same \_\_\_\_\_. Their lungs developed more healthily.

*development*

*lungs*

*damage*

*significantly*

*health*

*breathing*

*deficit*

*pollution*

*community*

*power*

*highway*

*regional*

*weaker*

*birthday*

*research*

*exhaled*

## LISTENING

Listen and fill in the spaces.

### Traffic pollution damages kids' lungs

Road pollution \_\_\_\_\_ to children's health. That's the worrying conclusion of the longest and largest study\* ever undertaken into the effects of traffic fumes on \_\_\_\_\_. Researchers from the University of Southern California spent 13 years studying children who lived within 500 meters of busy highways. They found \_\_\_\_\_ 3,600 children in the study had significantly weakened lungs. Researchers said this meant the children could have breathing problems for the \_\_\_\_\_. The main author of the study W. James Gauderman said: "Someone suffering a pollution-related deficit in lung function as a child will probably have less than healthy lungs all of \_\_\_\_\_." He added: "If you live in a high-pollution area and live near a busy road, you get \_\_\_\_\_ damage."

Gauderman and his team \_\_\_\_\_ on youngsters who lived near busy roads. Once a year, the team measured the children's lung power. It checked how much air the children could release in \_\_\_\_\_ how quickly it could be released. The team found that by their 18th birthday, children who \_\_\_\_\_ of a highway exhaled three per cent less air compared with children who lived one-and-a-half kilometers away. Further, the highway children's lung power was seven per cent \_\_\_\_\_ rate at which they could exhale. Gauderman said that: "Even if you are in a relatively low regional pollution area, living near a road produces lung problems." About a \_\_\_\_\_ moved away from busy roads during the study but stayed near the same community. Their \_\_\_\_\_ healthily.

## AFTER READING / LISTENING

**1. WORD SEARCH:** Look in your dictionaries / computer to find collocates, other meanings, information, synonyms ... for the words '**traffic**' and '**pollution**'.

- Share your findings with your partners.
- Make questions using the words you found.
- Ask your partner / group your questions.

**2. ARTICLE QUESTIONS:** Look back at the article and write down some questions you would like to ask the class about the text.

- Share your questions with other classmates / groups.
- Ask your partner / group your questions.

**3. GAP FILL:** In pairs / groups, compare your answers to this exercise. Check your answers. Talk about the words from the activity. Were they new, interesting, worth learning...?

**4. STUDENT "TRAFFIC POLLUTION" SURVEY:** In pairs / groups, write down questions about traffic and pollution.

- Ask other classmates your questions and note down their answers.
- Go back to your original partner / group and compare your findings.
- Make mini-presentations to other groups on your findings.

**5. TEST EACH OTHER:** Look at the words below. With your partner, try to recall exactly how these were used in the text:

- |                             |                       |
|-----------------------------|-----------------------|
| • traffic                   | • lungs               |
| • 500                       | • community           |
| • 3,600                     | • road pollution      |
| • 18 <sup>th</sup> birthday | • Southern California |
| • 13 years                  | • study               |
| • 1 ½ km                    | • breath              |



## DISCUSSION

### STUDENT A's QUESTIONS (Do not show these to student B)

- a. Did the headline make you want to read the article?
- b. Did anything in the article surprise you?
- c. What do you think of road pollution?
- d. Do you live or have you lived near a busy road?
- e. Is there a lot of road pollution near where you live?
- f. What is the worst pollution you have encountered?
- g. What is your government doing to tackle road pollution?
- h. Should vehicles with high emissions be banned from the roads?
- i. What bothers you more, road pollution or noise pollution?
- j. Do you think motorists should pay to use busier roads?



### STUDENT B's QUESTIONS (Do not show these to student A)

- a. Did you like reading this article?
- b. What do you think about what you read?
- c. When do you think roads will become less polluted?
- d. Have you ever suffered any form of lung complaint?
- e. Do you know of any traffic pollution surveys in your town/city?
- f. Would you raise children near a busy road?
- g. Do you think children with lung damage should sue their government for damages?
- h. Would you be angry with your parents if they raised you near a busy road?
- i. Are drivers criminals if they use busy roads and know they are polluting children's lungs?
- j. Did you like this discussion?

**AFTER DISCUSSION:** Join another partner / group and tell them what you talked about.

- a. What was the most interesting thing you heard?
- b. Was there a question you didn't like?
- c. Was there something you totally disagreed with?
- d. What did you like talking about?
- e. Which was the most difficult question?

## **SPEAKING**

### **ROLE PLAY: CLASSROOM DEBATE:**

Team up with classmates into groups of four. Discuss your role and what to say before the role play begins.

Role A – Road environmentalist

You are anti car and an anti vehicle person. You think everyone should go on public transport e.g. the metro, bus, trolleybus or tram.

Role B – Car lover

You love your car. You need your car. You drive to work. You drive to the supermarket. You drive everywhere! There are no trains and buses in your area.

Role C – A cyclist

You hate cars. They run you down. Their fumes suffocate you. You think everyone should cycle to work as it would be good for them. People would be healthier and spend less time in hospital. You think car drivers are as bad as smokers.

Role D – A 4x4 school run driver

You take your kids to school every day. You clog up the roads every morning. Your vehicle does very little mileage to the gallon/few kilometers to the litre. You hate small cars.

Role E – An oil company owner

You believe all studies into road pollution are rubbish. If people stopped using cars, the world economy would collapse. No one could get to work. Billions of people would lose their jobs.

When the role play has finished, talk about what people said. What do you agree and disagree with?

## LANGUAGE

**CORRECT WORD:** Choose the correct words from a–d below and write them in the article.

Road pollution is a (1) \_\_\_\_\_ danger to children's health. That's the worrying conclusion of the longest and largest study\* ever (2) \_\_\_\_\_ into the effects of traffic (3) \_\_\_\_\_ on child development. Researchers from the University of Southern California spent 13 years studying children who lived within 500 meters of busy highways. They found that most of the 3,600 children in the study had (4) \_\_\_\_\_ weakened lungs. Researchers said this meant the children could have breathing problems for the rest of their lives. The main author of the study W. James Gauderman said: "Someone suffering a pollution-related (5) \_\_\_\_\_ in lung function as a child will probably have less than healthy lungs all of his or her life." He added: "If you live in a high-pollution area and live near a busy road, you get a (6) \_\_\_\_\_ of the damage."

Gauderman and his team conducted their research on (7) \_\_\_\_\_ who lived near busy roads. Once a year, the team measured the children's lung power. It checked how much air the children could release in one (8) \_\_\_\_\_ and how quickly it could be released. The team found that by their 18th birthday, children who lived within 500 meters of a highway (9) \_\_\_\_\_ three per cent less air compared with children who lived one-and-a-half kilometers away. Further, the highway children's lung power was seven per cent weaker in the (10) \_\_\_\_\_ at which they could exhale. Gauderman said that: "Even if you are in a (11) \_\_\_\_\_ low regional pollution area, living near a road produces lung problems." About a third of the children moved away from busy roads during the study but stayed near the same community. Their lungs developed more (12) \_\_\_\_\_.

1.	(a)	series	(b)	seriousness	(c)	seriously	(d)	serious
2.	(a)	undertaker	(b)	undertaken	(c)	overtaken	(d)	partaken
3.	(a)	fuming	(b)	fumigate	(c)	fume	(d)	fumes
4.	(a)	significantly	(b)	signifying	(c)	signify	(d)	significant
5.	(a)	deficits	(b)	deficient	(c)	deficit	(d)	surplus
6.	(a)	double	(b)	double park	(c)	doubling	(d)	doubting
7.	(a)	youngish	(b)	youngsters	(c)	young	(d)	youth
8.	(a)	breath	(b)	breathe	(c)	breathing	(d)	breathless
9.	(a)	exhaled	(b)	inhaled	(c)	impaled	(d)	polluted
10.	(a)	ratings	(b)	ration	(c)	pro rata	(d)	rate
11.	(a)	relate	(b)	relatively	(c)	relatives	(d)	relativity
12.	(a)	healthily	(b)	healthy	(c)	healthful	(d)	health check

## **HOMEWORK**

**1. VOCABULARY EXTENSION:** Choose several of the words from the text. Use a dictionary or Google's search field (or another search engine) to build up more associations / collocations of each word.

**2. TRAFFIC POLLUTION:** Search the Internet and find more information about traffic pollution. Talk about what you discover with your partner(s) in the next lesson.

**3. POSTER:** Make a poster about traffic pollution. Show your poster to your classmates in the next lesson.

**4. NEWSPAPER ARTICLE:** Write a newspaper article about traffic pollution in your town/city. Discuss greenhouse gasses, gas guzzling cars and why people don't walk to work anymore... Compare it to other forms of pollution. Interview some people (imagine) to find out their view. (Minimum 100 words) Read what you wrote to your classmates in the next lesson. Which article was best and why?

## ANSWERS

### TRUE / FALSE:

- a. T      b. F      c. F      d. T      e. F      f. F      g. T      h. F

### SYNONYM MATCH:

- |                  |               |
|------------------|---------------|
| a. pollution     | smog          |
| b. children      | youngsters    |
| c. fumes         | emissions     |
| d. significantly | considerably  |
| e. deficit       | reduction     |
| f. measured      | determined    |
| g. exhale        | breath out    |
| h. further       | additionally  |
| i. rate          | proportion    |
| j. relatively    | comparatively |

### PHRASE MATCH:

- |                                 |                                   |
|---------------------------------|-----------------------------------|
| a. Road pollution is a serious  | danger to children's health       |
| b. Researchers from the         | University of Southern California |
| c. ...children who lived within | 500 meters of busy highways       |
| d. significantly                | weakened lungs                    |
| e. Children could have          | breathing problems                |
| f. measured the children's      | lung power                        |
| g. how much air the children    | could release in one breath       |
| h. the rate at                  | which they could exhale           |
| i. a relatively                 | low regional pollution area       |
| j. Their lungs                  | developed more healthily          |

### GAP FILL:

#### Traffic pollution damages kids' lungs

Road **pollution** is a serious danger to children's **health**. That's the worrying conclusion of the longest and largest study\* ever undertaken into the effects of traffic fumes on child **development**. Researchers from the University of Southern California spent 13 years studying children who lived within 500 meters of busy highways. They found that most of the 3,600 children in the study had **significantly** weakened lungs. Researchers said this meant the children could have **breathing** problems for the rest of their lives. The main author of the study W. James Gauderman said: "Someone suffering a pollution-related **deficit** in lung function as a child will probably have less than healthy **lungs** all of his or her life." He added: "If you live in a high-pollution area and live near a busy road, you get a doubling of the **damage**."

Gauderman and his team conducted their **research** on youngsters who lived near busy roads. Once a year, the team measured the children's **lung** power. It checked how much air the children could release in one breath and how quickly it could be released. The team found that by their 18th **birthday**, children who lived within 500 meters of a highway **exhaled** three per cent less air compared with children who lived one-and-a-half kilometers away. Further, the **highway** children's lung power was seven per cent **weaker** in the rate at which they could exhale. Gauderman said that: "Even if you are in a relatively low **regional** pollution area, living near a road produces lung problems." About a third of the children moved away from busy roads during the study but stayed near the same community. Their lungs developed more **healthily**.

### LANGUAGE WORK

- 1 - d    2 - b    3 - d    4 - a    5 - c    6 - c    7 - b    8 - a    9 - a    10 - d    11 - b    12 - a