

Ministry of education and science of the Republic of Kazakhstan

Non-joint stock company  
«Almaty University of power engineering and telecommunications»

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**PROFESSIONAL ORIENTED FOREIGN LANGUAGE**

Study guide for 3<sup>rd</sup> year students of 5B073100 – Life safety and Environmental  
protection speciality

Almaty  
AUPET  
2019

**UDC 802.0:504 (075.8)**

**S32**

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Recommended to publication by Academic Council of Almaty University of power  
engineering and telecommunications (minutes № of .05.2019).

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S32 Professional oriented foreign language. Study guide for students of specialty  
Study guide for students of speciality 5B073100 – Life safety and Environmental  
protection reading skills of scientific and technical texts L.D.Sergeyeva,  
J.R.Gabdulina /. – Almaty: AUPET, 2019.

ISBN

This study guide is intended for intermediate students of English of the  
specialty Study guide for students of speciality 5B073100 – Life safety and  
Environmental protection reading skills of scientific and technical texts.

The study guide deals with the basics of translation, lexical difficulties of  
translation of scientific and technical literature. Much attention is paid to the  
terminology, which makes it possible to increase the active vocabulary by specialty.  
It might be used in class with a teacher as well as a self-study book.

**UDC 802.0:504 (075.8)**

**ISBN 978-601-7939-25-0**

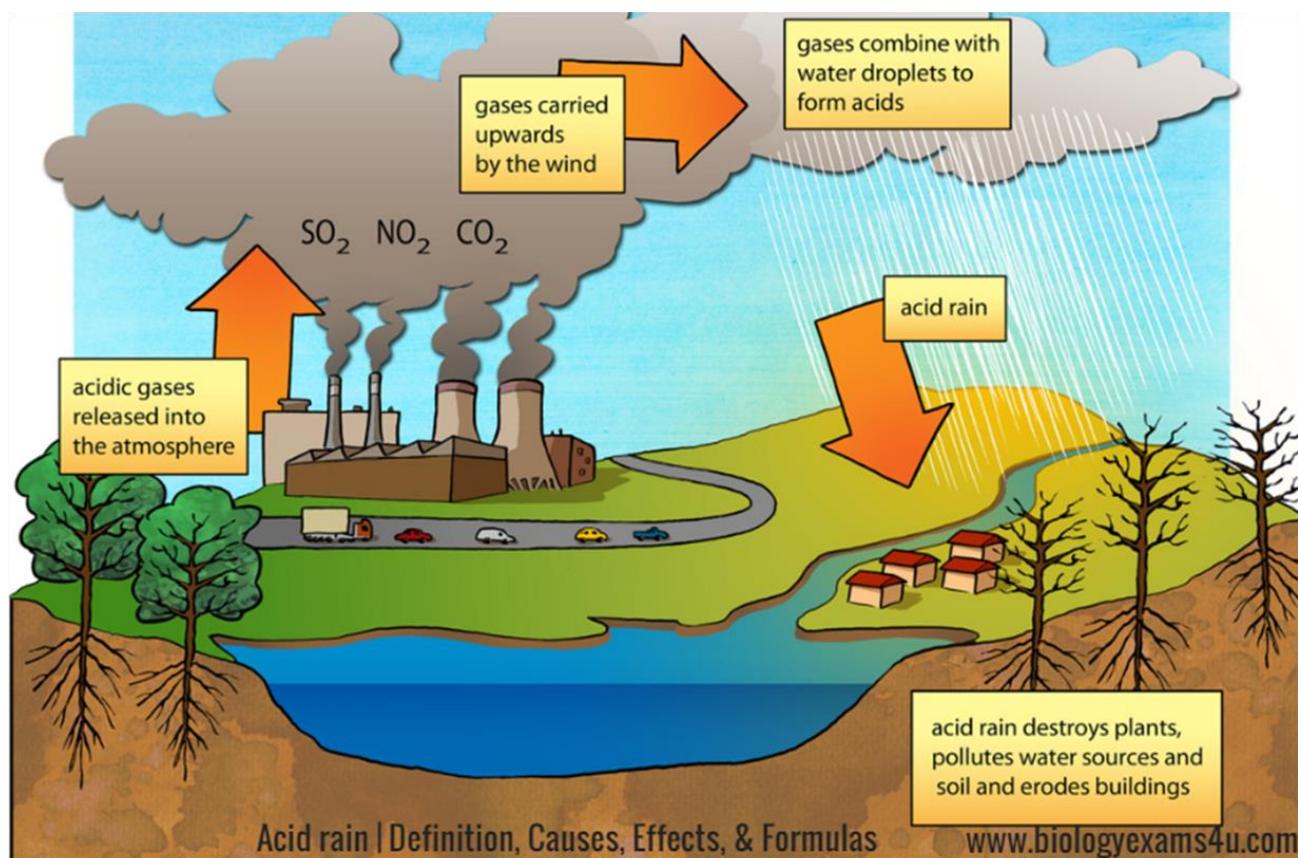
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## Unit 1

### Acid Rain

#### Text 1

### Acid Rain



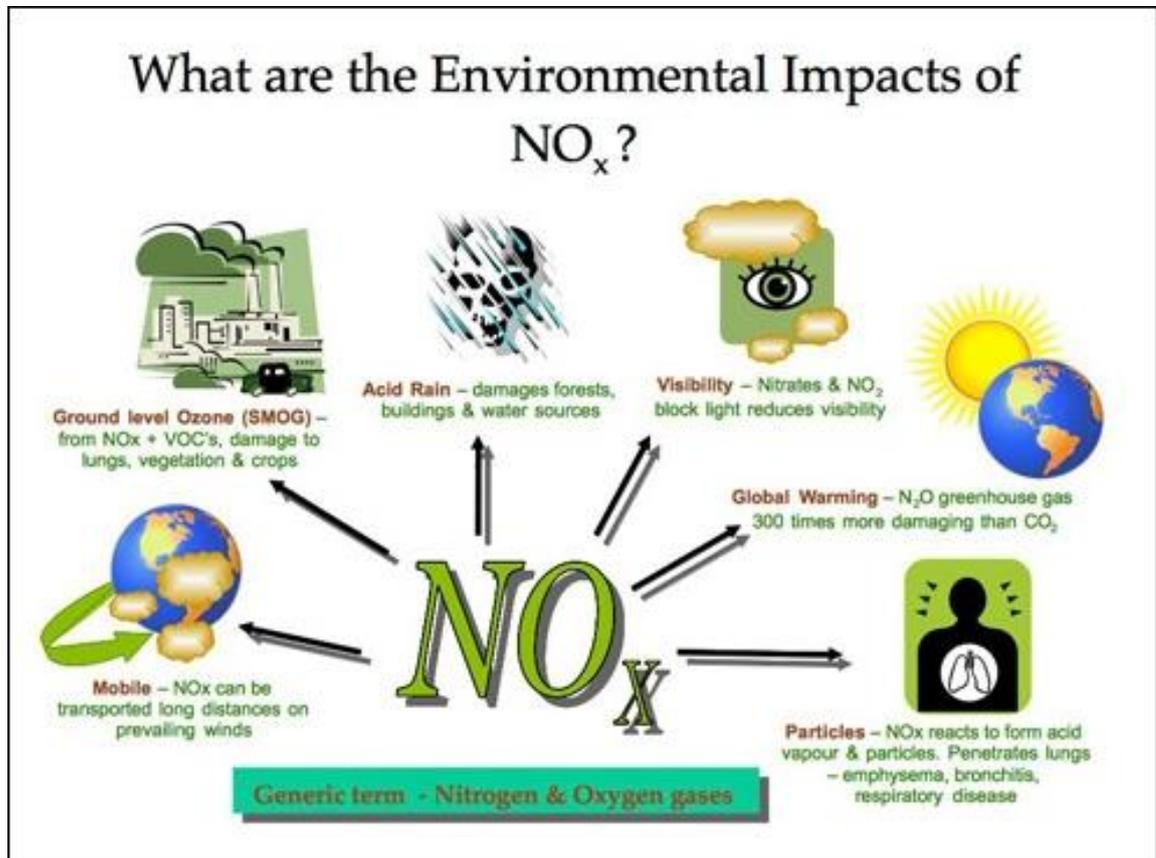
A) Acid rain is a broad term used to describe several ways that acids fall out of the atmosphere. A more precise term is acid deposition, which has two parts: wet and dry.

B) Wet deposition refers to acidic rain, fog, and snow. As this acidic water flows over and through the ground, it affects a variety of plants and animals. The strength of the effects depend on many factors, including how acidic the water is, the chemistry and buffering capacity of the soils involved, and the types of fish, trees, and other living things that rely on the water.

C) Dry deposition refers to acidic gases and particles. About half of the acidity in the atmosphere falls back to earth through dry deposition. The wind blows these acidic particles and gases onto buildings, cars, homes, and trees. Dry deposited gases and particles can also be washed from trees and other surfaces by rainstorms. When that happens, the runoff water adds those acids to the acid rain, making the combination more acidic than the falling rain alone.

D) Prevailing winds blow the compounds that cause both wet and dry acid deposition across state and national borders, and sometimes over hundreds of miles.

E) Scientists discovered, and have confirmed, that sulfur dioxide (SO<sub>2</sub>) and nitrogen oxides (NO<sub>x</sub>) are the primary causes of acid rain. In the US, About two-thirds of all SO<sub>2</sub> and one-fourth of all NO<sub>x</sub> comes from electric power generation that relies on burning fossil fuels like coal.



F) Acid rain occurs when these gases react in the atmosphere with water, oxygen, and other chemicals to form various acidic compounds. Sunlight increases the rate of most of these reactions. The result is a mild solution of sulfuric acid and nitric acid.

G) Over the past two decades, there have been numerous reports of damage to automotive paints and other coatings. The reported damage typically occurs on horizontal surfaces and appears as irregularly shaped, permanently etched areas. The damage can best be detected under fluorescent lamps, can be most easily observed on dark colored vehicles, and appears to occur after evaporation of a moisture droplet. In addition, some evidence suggests damage occurs most frequently on freshly painted vehicles. Usually the damage is permanent; once it has occurred, the only solution is to repaint.

H) The general consensus within the auto industry is that the damage is caused by some form of environmental fallout. "Environmental fallout," a term widely used in the auto and coatings industries, refers to damage caused by air pollution (e.g., acid rain), decaying insects, bird droppings, pollen, and tree sap. The results of laboratory experiments and at least one field study have demonstrated that

acid rain can scar automotive coatings. Furthermore, chemical analyses of the damaged areas of some exposed test panels showed elevated levels of sulfate, implicating acid rain.

I) The popular term "acid rain" refers to both wet and dry deposition of acidic pollutants that may damage material surfaces, including auto finishes. These pollutants, which are released when coal and other fossil fuels are burned, react with water vapor and oxidants in the atmosphere and are chemically transformed into sulfuric and nitric acids. The acidic compounds then may fall to earth as rain, snow, fog, or may join dry particles and fall as dry deposition.

J) Automotive coatings may be damaged by all forms of acid rain, including dry deposition, especially when dry acidic deposition is mixed with dew or rain. However, it has been difficult to quantify the specific contribution of acid rain to paint finish damage relative to damage caused by other forms of environmental fallout, by the improper application of paint or by deficient paint formulations. According to coating experts, trained specialists can differentiate between the various forms of damage, but the best way of determining the cause of chemically induced damage is to conduct a detailed, chemical analysis of the damaged area.

K) Because evaporation of acidic moisture appears to be a key element in the damage, any steps taken to eliminate its occurrence on freshly painted vehicles may alleviate the problem. The steps include frequent washing followed by hand drying, covering the vehicle during precipitation events, and use of one of the protective coatings currently on the market that claim to protect the original finish. (However, data on the performance of these coatings are not yet sufficient.)

L) The auto and coatings industries are fully aware of the potential damage and are actively pursuing the development of coatings that are more resistant to environmental fallout, including acid rain. The problem is not a universal one -- it does not affect all coatings or all vehicles even in geographic areas known to be subject to acid rain -- which suggests that technology exists to protect against this damage. Until that technology is implemented to protect all vehicles or until acid deposition is adequately reduced, frequent washing and drying and covering the vehicle appear to be the best methods for consumers who wish to minimize acid rain damage.

*1. Questions 1 – 4. Complete the summary of arguments below. Choose NO MORE THAN THREE WORDS from the passage for each answer.*

Acid rain is a broad term used to describe the ways that acids fall. More precisely, it should be called \_\_\_\_ (1). The primary causes of acid rain are \_\_\_\_ (2) and nitrogen oxides (NOX) \_\_\_\_ (3) occurs when these gases react in the atmosphere with chemicals. Acid rain may \_\_\_\_ (4) material surfaces.

*2. Questions 5 – 8. Answer questions 5 – 8 using NO MORE THAN FOUR WORDS from the passage.*

- 5) How many parts does acid deposition have?
- 6) What does acidic water affect when it flows over and through the ground?
- 7) What does dry deposition refer to?
- 8) What makes dry deposition travel long distances?

3. Questions 9 – 12. Complete the table below. Use **NO MORE THAN THREE WORDS** from the passage.

|                                                  |                                     |
|--------------------------------------------------|-------------------------------------|
| In the US ____ (9) of all SO <sub>2</sub>        | come from electric power generation |
| One-fourth of ____ (10)                          |                                     |
| Sunlight increases                               | ____ (11)                           |
| The damage to automotive paints typically occurs | ____ (12)                           |

4. Questions 13 – 15. Do the following statements agree with the views of the writer in Reading 4?

- |           |                                                      |
|-----------|------------------------------------------------------|
| YES       | if the statement agrees with the writer              |
| NO        | if the statement does not agree with the writer.     |
| NOT GIVEN | if there is no information about this in the passage |

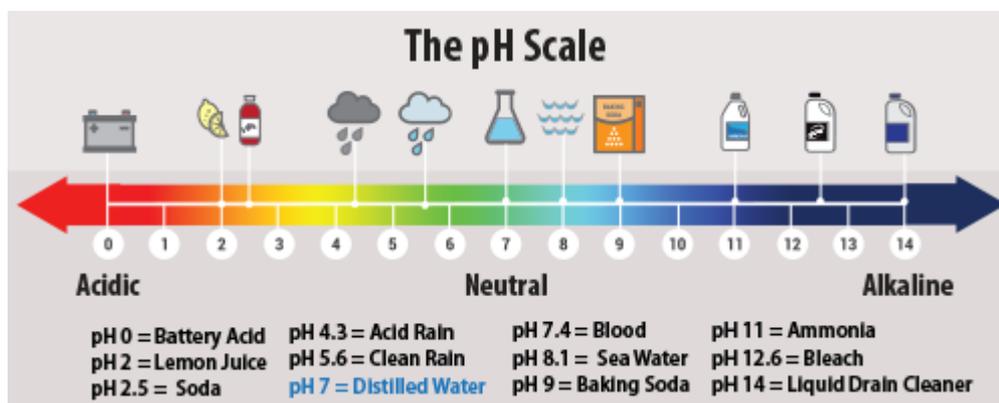
13) Environmental fallout' refers to damage specifically caused by air pollution.

14) It is still not clear exactly how much damage acid rain does, and how much other forms of environmental fallout cause?

15) Frequent washing and drying and covering the vehicle will remain the best methods to minimize acid rain damage at least for a period of ten years in the future.

## Text 2

### What is Acid Rain?



When any type of fuel is burnt, lots of different chemicals are produced in the air which can result in air pollution. The smoke that comes from a fire or the fumes of a car exhaust contains lots of invisible gases that are harmful to the environment.

In addition, power stations and factories all burn fuels that produce gases that pollute the air. Some of the gases, especially nitrogen oxides and sulphur dioxide, react with tiny droplets of water in clouds to form sulphuric and nitric acids. When the rain from these clouds fall, it falls as a very weak acid known as *acid rain*.

A scale called a *pH scale* can be used to measure the acidity of rain, and ranges from 0 to 14 with 0 as the most acidic and 14 as the most alkaline, or the opposite of acidic. Something with a pH value of 7 would be neutral; it is neither acidic nor alkaline.

The very strong acids would burn if they contacted the skin and can also destroy metals, but acid rain is much weaker and could never burn the skin. However, rain is almost always slightly acidic because it mixes with naturally occurring acids in the air. Unpolluted rain would have a pH value of about 5 or 6, but when the air is more polluted with nitrogen oxides or sulphuric dioxide the pH value could increase to a value of 4, which is more acidic. There have been instances of rain measuring as being a pH of 2.

Vinegar has a pH value of 2.2 and lemons juice a 2.3, and though two substances do not cause harm, acid rain can negatively affect the environment. It can be carried long distances in the atmosphere from continent to continent, and the acid can also take the form of snow and other precipitation. The acid rain can fall many miles from the source of the pollution and can have a serious effect on soil, trees, buildings, and water.

It can cause trees to grow much more slowly in forests or may cause them to die prematurely. In addition, as acid rain falls on a forest to trickles through the leaves of the trees and into the soil below. Some of it then finds its way into streams, rivers, and lakes.

Acid rain can dissolve and wash away nutrients and minerals in the soil, cause the release of harmful substances such as aluminum into the soil, and wear away the waxy protective coating of leaves. The process of photosynthesis may also be affected. Trees and other plants can become weakened and become more susceptible and attacked by diseases, insects, and bad weather.

In lakes, rivers, and other bodies of water, the effects of acid rain are much more obvious. When the acidity of a lake increases, the water becomes clearer and the number of fish and other animals in the water decrease. Though there are some species of plant and animals that can survive the acid rain, freshwater shrimp, snails, and mussels are the most quickly affected and the young of many fish are the worst affected. The acid rain can cause deformity in young fish and can prevent eggs from hatching properly.

All building materials usually become eroded too, but acid rain causes the natural process of erosion to increase. Statues, buildings, vehicles, cables, and pipes

can all be negatively affected by acid rain. There are some things made from limestone or sandstone that are particularly susceptible to the effects of acid rain.

At one time, acid rain was thought to only affect the area where the pollution was occurring. Later, though, after some study, pollution in one area was found to be causing acid rain far away from the source of the pollution. The wind carries the pollution many hundreds of miles away where it eventually falls as acid rain.

Preventing acid rain is not impossible, and one thing that can be done is to reduce emissions from the burning of fossil fuels, find alternative sources for energy, conserve resources, and then restore damage done by acid rain. A process called *liming* may be used to neutralize the water in lakes and rivers by adding powdered limestone to the water. However, it is very expensive.

*1. Which of the following gases react with tiny droplets of water in clouds to form acids?*

- a) nitrogen oxides;
- b) sulphur dioxide;
- c) both a) and b);
- d) neither a) or b).

*2. Which of the following measurement on a pH scale is the most acidic?*

- a) 0;
- b) 7;
- c) 10;
- d) 14.

*3. Which of the following pH measurements is often associated with unpolluted rain?*

- a) 5 or 6;
- b) 0 or 1;
- c) 13 or 14;
- d) 7.

*4. All the following statements are true EXCEPT:*

- a) acid rain can negatively affect the environment;
- b) acid rain can cause trees to grow much more slowly in forests;
- c) acid rain can dissolve and wash away nutrients and minerals in the soil;
- d) acid rain in lakes, rivers, and other bodies of water is not obvious.

*5. Which of the following measurements on a pH scale is an alkaline substance?*

- a) 7;
- b) 8-14;
- c) 0 – 6;
- d) None of the above.

*6. Which of the following is the process used to neutralize the water in lakes and rivers?*

- a) neutralization;

- b) acidic reduction;
- c) both a) and b);
- d) liming.

**Listening.**

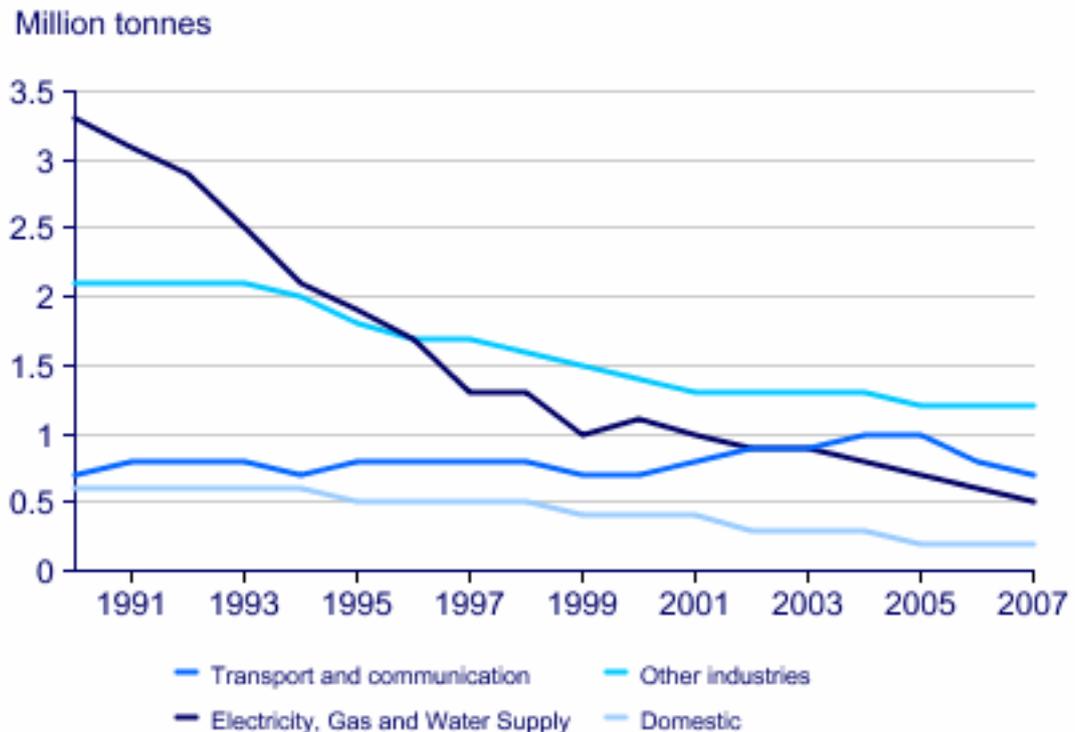
Go on the sites, listen and complete the listening tasks.

<http://ieltsliz.com/world-environmental-problems-vocabulary/>

<http://www.51ielts.com.au/jeffrey/ielts-listening/ielts-listening-section-4-practice/>

**Writing Task 1: line graph exercise**

The graph below shows UK acid rain emissions, measured in millions of tonnes, from four different sectors between 1990 and 2007.



**I've made the following essay into a gap-fill exercise**

Fill the gaps using these words:

produced, reaching, fell, responsible, saw, considerably, terms, drop, dramatic

The line graph compares four sectors in \_\_\_\_\_ of the amount of acid rain emissions that they produced over a period of 17 years in the UK.

It is clear that the total amount of acid rain emissions in the UK \_\_\_\_\_ between 1990 and 2007. The most \_\_\_\_\_ decrease was seen in the electricity, gas and water supply sector.

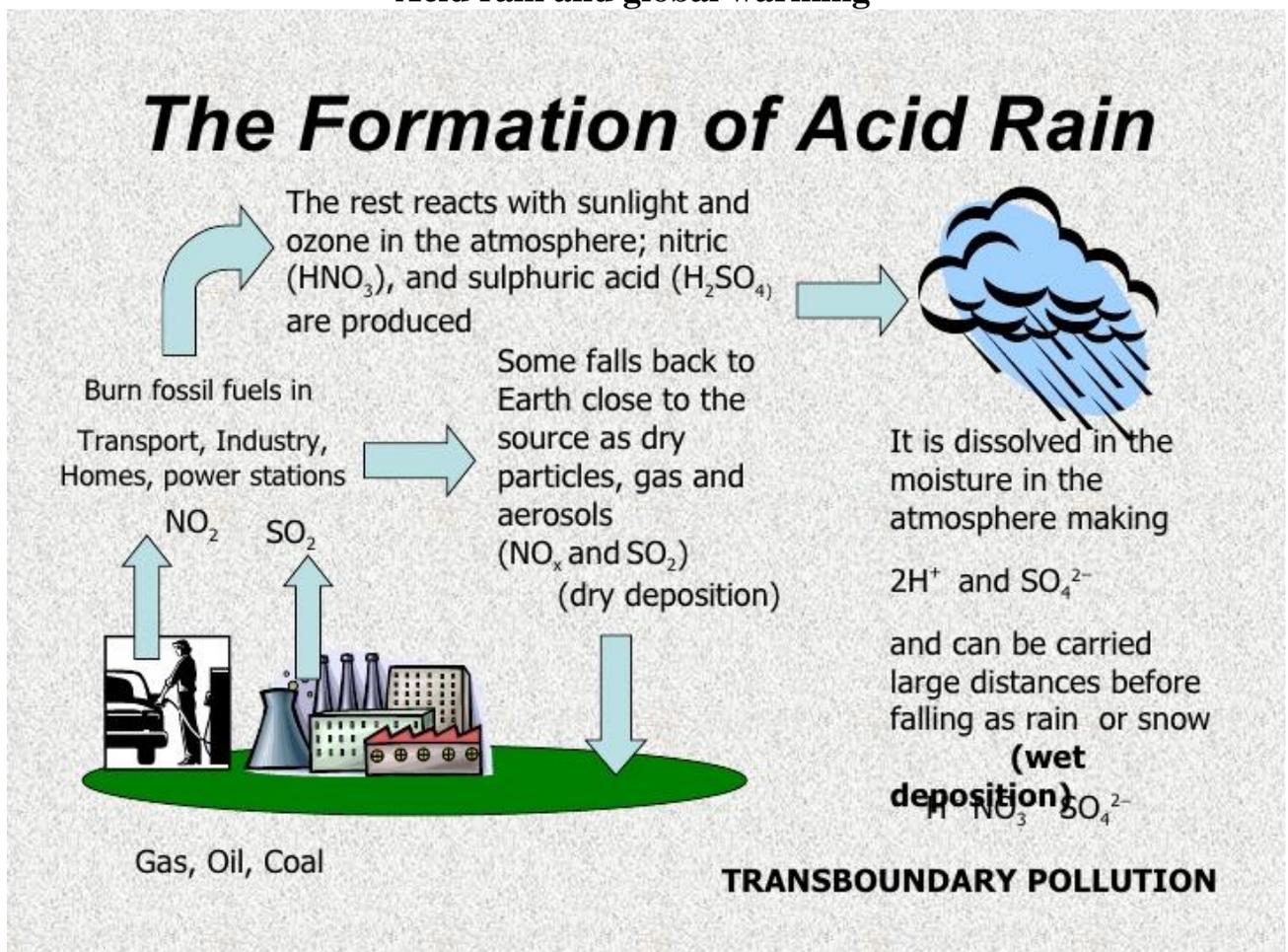
In 1990, around 3.3 million tonnes of acid rain emissions came from the electricity, gas and water sector. The transport and communication sector was \_\_\_\_\_ for about 0.7 million tonnes of emissions, while the domestic sector \_\_\_\_\_ around 0.6 million tonnes. Just over 2 million tonnes of acid rain gases came from other industries.

Emissions from electricity, gas and water supply fell dramatically to only 0.5 million tonnes in 2007, a \_\_\_\_\_ of almost 3 million tonnes. While acid rain gases from the domestic sector and other industries fell gradually, the transport sector \_\_\_\_\_ a small increase in emissions, \_\_\_\_\_ a peak of 1 million tonnes in 2005.

### Speaking 1

*Discuss the following questions and choose the correct answer.*

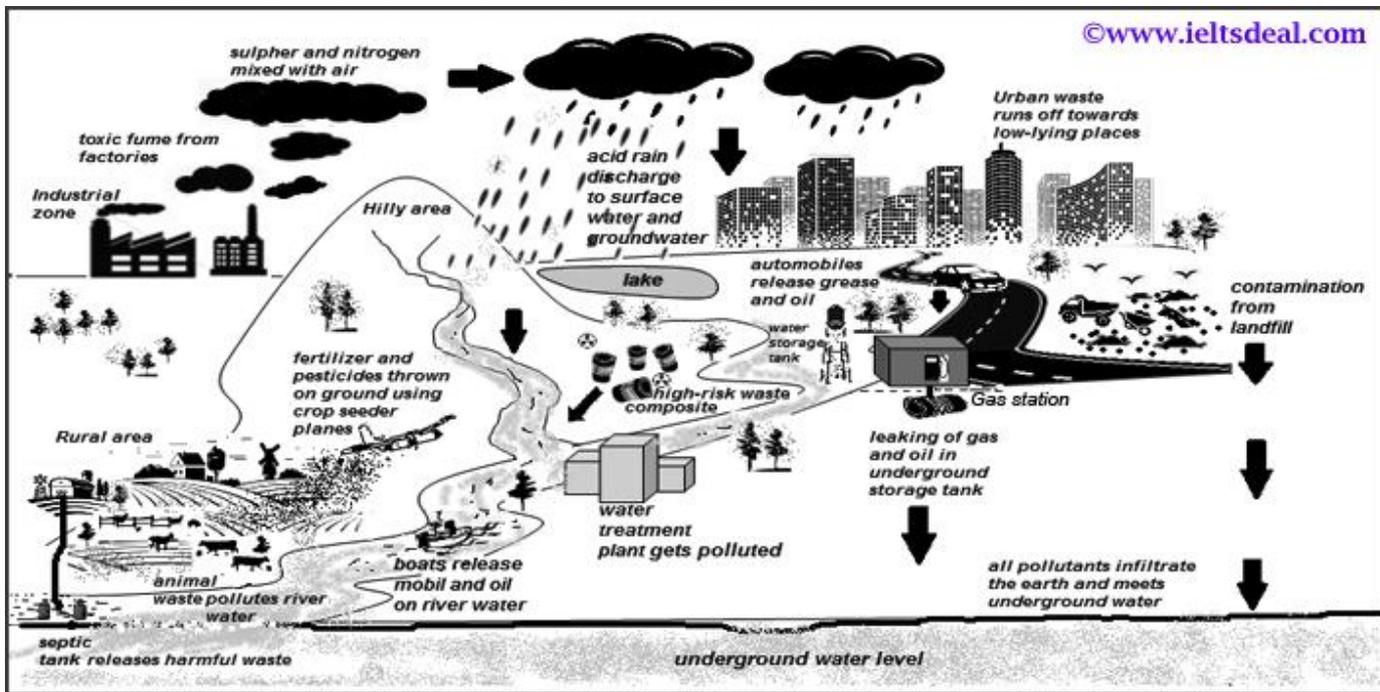
### Acid rain and global warming



1. *What problem does sulfur dioxide cause?*
  - a) acid rain;
  - b) alkaline rain;
  - c) it damages the ozone layer;
2. *How do lichens indicate levels of air pollution?*
  - a) Only bushy lichens can grow in very polluted air.
  - b) Lichens cannot grow at all in very polluted air.
  - c) Most lichens grow best in very polluted air.
3. *What problem does carbon monoxide from burning fuels cause?*
  - a) It is an important greenhouse gas.
  - b) It is a cause of acid rain.
  - c) It reduces the capacity of the blood to carry oxygen.
4. *Which of these is a biological consequence of acid rain?*
  - a) Damaged limestone statues.
  - b) Lowered pH of the water in rivers and streams.
  - c) Damaged trees and forests.
5. *What do water vapour, carbon dioxide and nitrous oxide have in common?*
  - a) They damage the ozone layer.
  - b) They are greenhouse gases.
  - c) They are part of the carbon cycle.
6. *Which of the following produces large amounts of atmospheric methane?*
  - a) The burning of fossil fuels.
  - b) Cattle farms.
  - c) Photosynthesis.
7. *Which of these is a likely consequence of an enhanced greenhouse effect?*
  - a) Holes in the ozone layer.
  - b) Lowered sea levels.
  - c) Climate change.
8. *Why is deforestation in tropical regions a problem?*
  - a) More carbon dioxide is absorbed from the atmosphere.
  - b) Less carbon dioxide is 'locked up' in wood.
  - c) There is a dangerous increase in biodiversity.
9. *Which of the following helps to reduce the amount of waste and pollution in the environment?*
  - a) Recycling used materials.
  - b) Building taller chimneys for power stations.
  - c) Using artificial fertilizer to help crops grow better.
10. *Which polluting gas can be produced from rotting animal waste and from car engines?*
  - a) CFCs.
  - b) Methane.
  - c) Nitrous oxide.

## Speaking 2

The diagram shows how water becomes polluted in urban and rural areas. Describe the diagram.

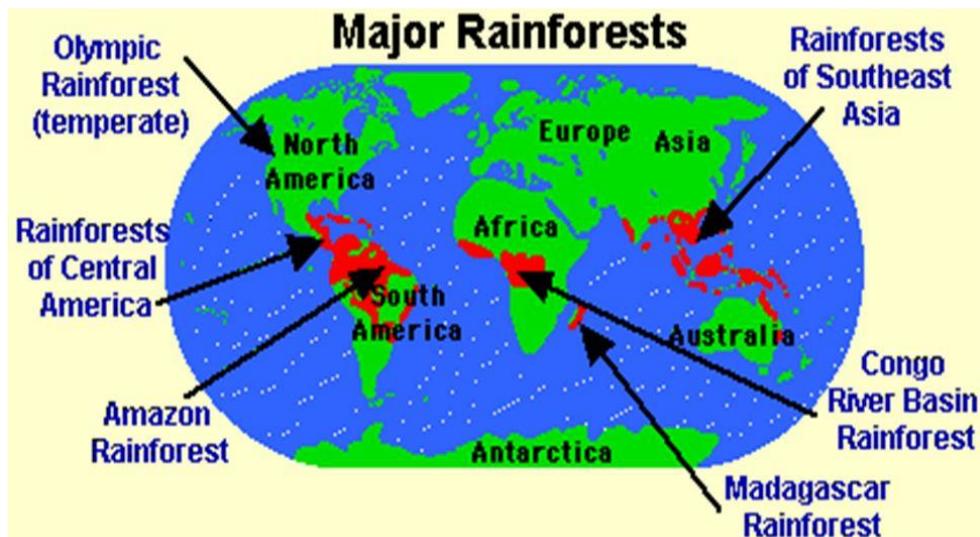


## Unit 2

### Deforestation and Desertification

## Text 1

### Alarming Rate of Loss of Tropical Rainforest



Adults and children are frequently confronted with statements about the alarming rate of loss of tropical rainforests. For example, one graphic illustration to which children might readily relate is the estimate that rainforests are being destroyed at a rate equivalent to one thousand football fields every forty minutes – about the duration of a normal classroom period. In the face of the frequent and often vivid media coverage, it is likely that children will have formed ideas about rainforests – what and where they are, why they are important, what endangers them – independent of any formal tuition. It is also possible that some of these ideas will be mistaken. Many studies have shown that children harbor misconceptions about ‘pure’, curriculum science. These misconceptions do not remain isolated but become incorporated into a multifaceted, but organized, conceptual framework, making it and the component ideas, some of which are erroneous, more robust but also accessible to modification. These ideas may be developed by children absorbing ideas through the popular media. Sometimes this information may be erroneous. It seems schools may not be providing an opportunity for children to re-express their ideas and so have them tested and refined by teachers and their peers.

Despite the extensive coverage in the popular media of the destruction of rainforests, little formal information is available about children’s ideas in this area. The aim of the present study is to start to provide such information, to help teachers design their educational strategies to build upon correct ideas and to displace misconceptions and to plan programs in environmental studies in their schools.

The study surveys children’s scientific knowledge and attitudes to rainforests. Secondary school children were asked to complete a questionnaire containing five open-form questions. The most frequent responses to the first question were descriptions which are self-evident from the term ‘rainforest’. Some children described them as damp, wet or hot. The second question concerned the geographical location of rainforests. The commonest responses were continents or countries: Africa (given by 43% of children), South America (30%), Brazil (25%). Some children also gave more general locations, such as being near the Equator.

Responses to question three concerned the importance of rainforests. The dominant idea, raised by 64% of the pupils, was that rainforests provide animals with habitats. Fewer students responded that rainforests provide plant habitats, and even fewer mentioned the indigenous populations of rainforests. More girls (70%) than boys (60%) raised the idea of the rainforest as animal habitats.

Similarly, but at a lower level, more girls (13%) than boys (5%) said that rainforests provided human habitats. These observations are generally consistent with our previous studies of pupils’ views about the use and conservation of rainforests, in which girls were shown to be more sympathetic to animals and expressed views which seem to place an intrinsic value on non-human animal life.

The fourth question concerned the causes of the destruction of rainforests. Perhaps encouragingly, more than half of the pupils (59%) identified that it is human activities which are destroying rainforests, some personalizing the

responsibility by the use of terms such as ‘we are’. About 18% of the pupils referred specifically to logging activity.

One misconception, expressed by some 10% of the pupils, was that acid rain is responsible for rainforest destruction; a similar proportion said that pollution is destroying rainforests. Here, children are confusing rainforest destruction with damage to the forests of Western Europe by these factors. While two-fifths of the students provided the information that the rainforests provide oxygen, in some cases this response also embraced the misconception that rainforest destruction would reduce atmospheric oxygen, making the atmosphere incompatible with human life on Earth.

In answer to the final question about the importance of rainforest conservation, the majority of children simply said that we need rainforests to survive. Only a few of the pupils (6%) mentioned that rainforest destruction may contribute to global warming. This is surprising considering the high level of media coverage on this issue. Some children expressed the idea that the conservation of rainforests is not important.

The results of this study suggest that certain ideas predominate in the thinking of children about rainforests. Pupils’ responses indicate some misconceptions in the basic scientific knowledge of rainforests’ ecosystems such as their ideas about rainforests as habitats for animals, plants and humans and the relationship between climatic change and destruction of rainforests.

Pupils did not volunteer ideas that suggested that they appreciated the complexity of causes of rainforest destruction. In other words, they gave no indication of an appreciation of either the range of ways in which rainforests are important or the complex social, economic and political factors which drive the activities which are destroying the rainforests. One encouragement is that the results of similar studies about other environmental issues suggest that older children seem to acquire the ability to appreciate value and evaluate conflicting views. Environmental education offers an arena in which these skills can be developed, which is essential for these children as future decision-makers.

*1. Questions 1–8. Do the following statements agree with the information given in Reading Sample 7?*

TRUE *if the statement agrees with the information*

FALSE *if the statement contradicts the information*

NOT GIVEN *if there is no information on this*

1) The plight of the rainforests has largely been ignored by the media.

2) Children only accept opinions on rainforests that they encounter in their classrooms.

3) It has been suggested that children hold mistaken views about the ‘pure’ science that they study at school.

4) The fact that children’s ideas about science form part of a larger framework of ideas mean that it is easier to change them.

5) The study involved asking children a number of yes/no questions such as ‘Are there any rainforests in Africa?’

6) Girls are more likely than boys to hold mistaken views about the rainforests’ destruction.

7) The study reported here follows on from a series of studies that have looked at children’s understanding of rainforests.

8) A second study has been planned to investigate primary school children’s ideas about rainforests.

*2. Questions 9–13. The box below gives a list of responses A–P to the questionnaire discussed in Reading sample 7. Answer the following questions by choosing the correct responses A–P.*

9) What was the children’s most frequent response when asked where the rainforests were?

10) What was the most common response to the question about the importance of the rainforests?

11) What did most children give as the reason for the loss of the rainforests?

12) Why did most children think it important for the rainforests to be protected?

13) Which of the responses is cited as unexpectedly uncommon, given the amount of time spent on the issue by the newspapers and television?

a) There is a complicated combination of reasons for the loss of the rainforests.

b) The rainforests are being destroyed by the same things that are destroying the forests of Western Europe.

c) Rainforests are located near the Equator.

d) Brazil is home to the rainforests.

e) Without rainforests some animals would have nowhere to live.

f) Rainforests are important habitats for a lot of plants.

g) People are responsible for the loss of the rainforests.

h) The rainforests are a source of oxygen.

i) Rainforests are of consequence for a number of different reasons.

j) As the rainforests are destroyed, the world gets warmer.

k) Without rainforests there would not be enough oxygen in the air.

l) There are people for whom the rainforests are home.

m) Rainforests are found in Africa.

n) Rainforests are not really important to human life.

o) The destruction of the rainforests is the direct result of logging activity.

p) Humans depend on the rainforests for their continuing existence.

3. *Question 14. Choose the correct letter A, B, C, D or E. Which of the following is the most suitable title for Reading sample Passage 7?*

- a) The development of a program in environmental studies within a science curriculum
- b) Children's ideas about the rainforests and the implications for course design
- c) The extent to which children have been misled by the media concerning the rainforests
- d) How to collect, collate and describe the ideas of secondary school children
- e) The importance of the rainforests and the reasons for their destruction

## **Text 2**

### **Deforestation in the 21<sup>st</sup> century**

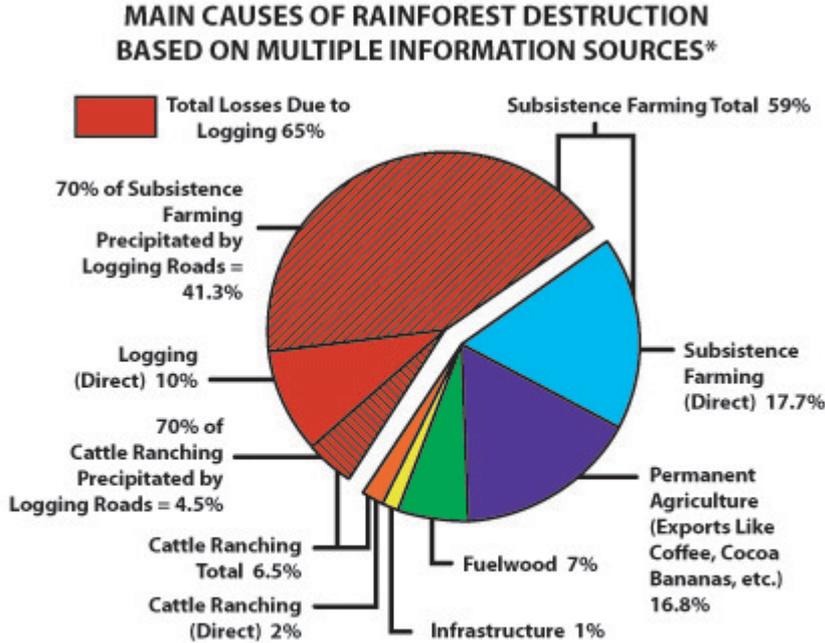
*When it comes to cutting down trees, satellite data reveals a shift from the patterns of the past*

A) Globally, roughly 13 million hectares of forest are destroyed each year. Such deforestation has long been driven by farmers desperate to earn a living or by loggers building new roads into pristine forest. But now new data appears to show that big, block clearings that reflect industrial deforestation have come to dominate, rather than these smaller-scale efforts that leave behind long, narrow swaths of cleared land. Geographer Ruth De Fries of Columbia University and her colleagues used satellite images to analyze tree-clearing in countries ringing the tropics, representing 98 per cent of all remaining tropical forest. Instead of the usual 'fish bone' signature of deforestation from small-scale operations, large, chunky blocks of cleared land reveal a new motive for cutting down woods.

B) In fact, a statistical analysis of 41 countries showed that forest loss rates were most closely linked with urban population growth and agricultural exports in the early part of the 21st century - even overall population growth was not as strong an influence. 'In previous decades, deforestation was associated with planned colonization, resettlement schemes in local areas and farmers clearing land to grow food for subsistence,' De Fries says. 'What we're seeing now is a shift from small-scale farmers driving deforestation to distant demands from urban growth, agricultural trade and exports being more important drivers.'

C) In other words, the increasing urbanization of the developing world, as populations leave rural areas to concentrate in booming cities, is driving deforestation, rather than containing it. Coupled with this there is an ongoing increase in consumption in the developed world of products that have an impact on forests, whether furniture, shoe leather or chicken feed. 'One of the really striking characteristics of this century is urbanization and rapid urban growth in the developing world,' De Fries says, 'People in cities need to eat.' 'There's no surprise there,' observes Scott Poynton, executive director of the Tropical Forest Trust, a Switzerland-based organization that helps businesses implement and manage

sustainable forestry in countries such as Brazil, Congo and Indonesia. ‘It’s not about people chopping down trees. It’s all the people in New York, Europe and elsewhere who want cheap products, primarily food.’



*New studies have shown that figures for damage due to logging in the Amazon should be doubled, since half of the damage was not showing up on satellite images.*

\*Based on information from the United Nations Food and Agriculture Organization, World Wildlife Fund, World Resources Institute and Woods Hole Oceanographic Institute.

D) Dearies argues that in order to help sustain this increasing urban and global demand, agricultural productivity will need to be increased on lands that have already been cleared. This means that better crop varieties or better management techniques will need to be used on the many degraded and abandoned lands in the tropics. And the Tropical Forest Trust is building management systems to keep illegally harvested wood from ending up in, for example, deck chairs, as well as expanding its efforts to look at how to reduce the ‘forest footprint’ of agricultural products such as palm oil. Poynton says, ‘The point is to give forests value as forests, to keep them as forests and give them a use as forests. They’re not going to be locked away as national parks. That’s not going to happen.’

E) But it is not all bad news. Halts in tropical deforestation have resulted in forest regrowth in some areas where tropical lands were previously cleared. And forest clearing in the Amazon, the world’s largest tropical forest, dropped from roughly 1.9 million hectares a year in the 1990s to 1.6 million hectares a year over the last decade, according to the Brazilian government. ‘We know that deforestation has slowed down in at least the Brazilian Amazon,’ De Fries says. ‘Every place is different. Every country has its own particular situation, circumstances and driving forces.’

F) Regardless of this, deforestation continues, and cutting down forests is one of the largest sources of greenhouse gas emissions from human activity - a double

blow that both eliminates a biological system to suck up CO<sub>2</sub> and creates a new source of greenhouse gases in the form of decaying plants. The United Nations Environment Program estimates that slowing such deforestation could reduce some 50 billion metric tons of CO<sub>2</sub>, or more than a year of global emissions. Indeed, international climate negotiations continue to attempt to set up a system to encourage this, known as the UN Development Program's fund for reducing emissions from deforestation and forest degradation in developing countries (REDD). If policies [like REDD] are to be effective, we need to understand what the driving forces are behind deforestation, De Fries argues. This is particularly important in the light of new pressures that are on the horizon: the need to reduce our dependence on fossil fuels and find alternative power sources, particularly for private cars, is forcing governments to make products such as biofuels more readily accessible. This will only exacerbate the pressures on tropical forests

G) But millions of hectares of pristine forest remains to protect, according to this new analysis from Columbia University. Approximately 60 percent of the remaining tropical forests are in countries or areas that currently have little agricultural trade or urban growth. The amount of forest area in places like central Africa, Guyana and Suriname, De Fries notes, is huge. 'There's a lot of forest that has not yet faced these pressures.'

*1. Questions 1-6. Reading Passage 2 has seven paragraphs, A-G. Which paragraph contains the following information? NB: You may use any letter more than once.*

- 1) two ways that farming activity might be improved in the future.
- 2) reference to a fall in the rate of deforestation in one area.
- 3) the amount of forest cut down annually.
- 4) how future transport requirements may increase deforestation levels.
- 5) a reference to the typical shape of early deforested areas.
- 6) key reasons why forests in some areas have not been cut down.

*2. Questions 7-8. Choose TWO letters, A-E. Which TWO of these reasons do experts give for current patterns of deforestation?*

- 1) to provide jobs.
- 2) to create transport routes.
- 3) to feed city.
- 4) to manufacture low-budget consumer items.
- 5) to meet government targets.

*3. Question 9-10. Choose TWO letters, A-E. The list below gives some of the impacts of tropical deforestation. Which TWO of these results are mentioned by the writer of the text?*

- 1) local food supplies fall.
- 2) soil becomes less fertile.

- 3) some areas have new forest growth.
- 4) some regions become uninhabitable.
- 5) local economies suffer.

4. Questions 11-13. Complete the sentences below. Choose **NO MORE THAN TWO WORDS AND/OR A NUMBER** from the passage for each answer

11) The expression ‘a \_\_\_\_’ is used to assess the amount of wood used in certain types of production.

12) Greenhouse gases result from the \_\_\_\_ that remain after trees have been cut down.

13) About \_\_\_\_ of the world’s tropical forests have not experienced deforestation yet.

### Text 3

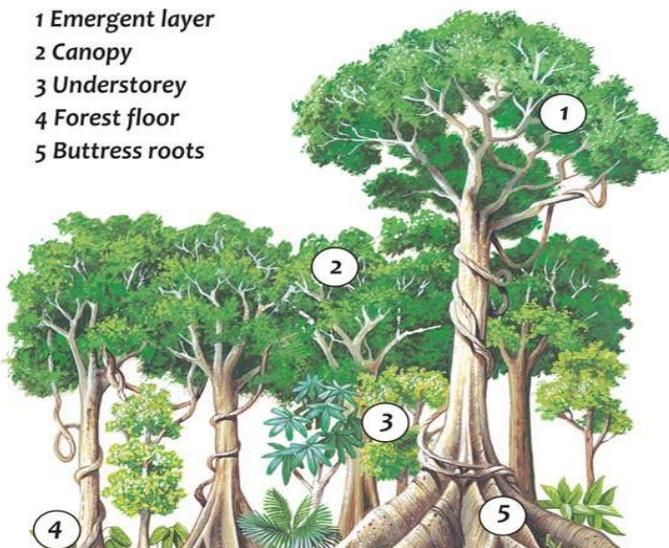
#### Rainforests rule!

A world like no other – perhaps this is the best way to describe the world of the rainforest. No rainforest is exactly the same, yet most rainforests are now distributed in the small land area 22.5 degrees north and 22.5 degrees south of the equator, between the Tropic of Capricorn and the Tropic of Cancer. You can find tropical rainforests in South America and Indonesia. Other rainforests flourish further from the equator, in Thailand and Sri Lanka.

Despite occupying a relatively small area, rainforests have a colossal role to play in maintaining the world as we know it. Tropical rainforests are home to a rich, colourful variety of medicinal plants, food, birds and animals. Can you believe that a single bush in the Amazon may have more species of ants than the whole of Britain? Four hundred and eighty varieties of trees may be found in just one hectare of rainforest. These forests sustain around 50 per cent of all the species on earth and offer a way of life to many people living in and around the forest.

#### LAYERS OF THE RAINFOREST

- 1 Emergent layer
- 2 Canopy
- 3 Understorey
- 4 Forest floor
- 5 Buttress roots



Rainforests are the lungs of the planet, storing vast quantities of carbon dioxide and producing a significant amount of the world’s oxygen. Rainforests have their own perfect system for ensuring their own survival: the tall trees make a canopy of branches and leaves which protect themselves, smaller plants and the forest animals from heavy rain, intense dry heat from the sun and strong winds.

Amazingly, the trees grow in such a way that their leaves and

branches, although close together, never actually touch those of another tree. Scientists think this is a deliberate tactic to prevent the spread of any tree diseases and make life more difficult for leaf-eating insects like caterpillars. To survive in the forest, animals must climb, jump, fly or glide across the gaps. The ground floor of the forest is not all tangled leaves and bushes, like in films, but is actually fairly clear. It is where leaves decompose into food for the trees and other forest life.

They are not called rainforests for nothing! Rainforests can generate 75 per cent of their own rain. At least 80 inches of rain a year is normal and in some areas there may be as much as 430 inches of rain annually. This is real rain – your umbrella may protect you in a shower, but it won't keep you dry if there is a full rainstorm. In just two hours, streams can raise ten to twenty feet. The humidity of large rainforests contributes to the formation of rainclouds that may travel to other countries in need of rain.

Worryingly, rainforests around the world are disappearing at an alarming rate, thanks to deforestation, river pollution and soil erosion as land is being claimed for agriculture and trees are felled for wood. A few thousand years ago, tropical rainforests covered as much as 12 per cent of the land surface on earth, but today this has fallen to less than 5.3 per cent.

We can only hope that the world governments work together with environmentalists and businesses to use their environmental knowledge and power to preserve the rainforests – awe-inspiring, beautiful and vital for our existence.

*1. Match the definitions (a–g) with the vocabulary (1–7).*

| Word             | Definition                                                                                       |
|------------------|--------------------------------------------------------------------------------------------------|
| 1) rainforest    | a) set of animals or plants that have similar characteristics to each other                      |
| 2) sustain       | b) being rubbed away gradually                                                                   |
| 3) species       | c) to keep alive                                                                                 |
| 4) canopy        | d) a forest in a tropical area which receives a lot of rain                                      |
| 5) humidity      | e) the cutting down of trees in a large area; the destruction of forests by people               |
| 6) deforestation | f) a measurement of how much water there is in the air                                           |
| 7) erosion       | g) the branches and leaves that spread out at the top of a group of trees forming a type of roof |

*2. Circle the best answer.*

*8) Rainforests can be found*

- a) only in South America;
- b) in many countries all over the world;
- c) in a small strip of land, mostly equatorial.

*9) Rainforests hold*

- a) more than half the world's species;

- b) less than half the world's species;
- c) approximately half the world's species.

10) *Rainforests are 'the lungs of the planet' because they*

- a) produce a large amount of oxygen and store a large amount of carbon dioxide;
- b) store a small amount of oxygen and produce a large amount of carbon dioxide;
- c) produce a small amount of oxygen and store a small amount of carbon dioxide.

11) *Rainforest tree leaves never touch the leaves of another tree*

- a) to make rain fall on the ground of the forest;
- b) to protect the trees from disease and insects;
- c) to give the forest animals more exercise.

12) *Rainforests make a difference to the world's water supply because*

- a) the humidity of the rainforests produces rainclouds;
- b) rainforests are very rainy places;
- c) the rainforests produce their own rain.

13) *Over the last few thousand years, the land covered by rainforests has*

- a) increased;
- b) decreased;
- c) stayed the same

### **Discussion.**

What do you think of this article? Do you agree or disagree with what the writer says?

### **Text 4**

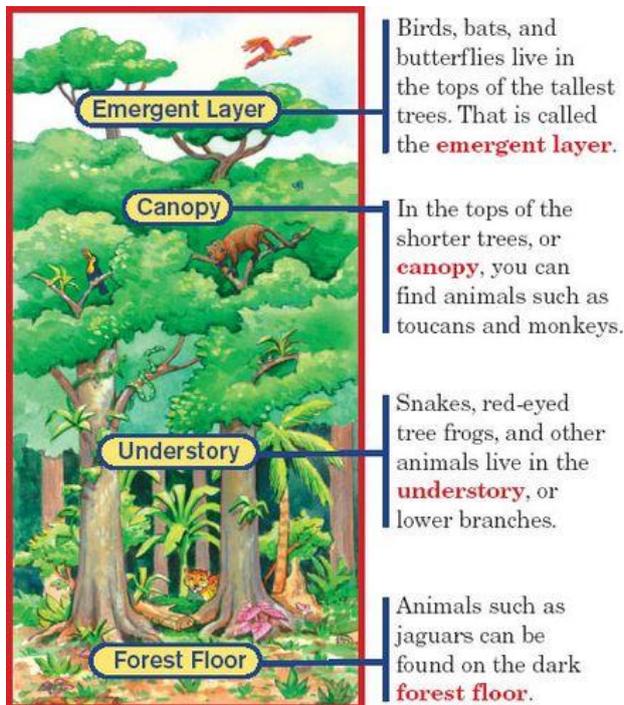
#### **What is rainforest?**

A rain forest is a thick jungle which gets an unusually large amount of rain. Rain forests cover about 6% of the earth's surface. They hold about one-half of the world's plant and animal types. The four layers of a rain forest are the emergent layer, canopy layer, understory layer and forest floor.

The emergent layer is made up of very tall trees up to 200 feet high. They are usually evergreens. There is good sunlight there. The canopy layer forms a roof over the 2 remaining layers. Animals like snakes, toucans, and tree frogs live in this layer. Not much sun reaches the next layer, the understory layer. Plants then have to grow larger leaves to try to reach the sun. Jaguars, leopards and many insects live here. The final layer, the forest floor, has almost no plants. Many leaves decay quickly there due to the darkness. Giant anteaters live in this layer.

Rainforests are found in five major areas of the world. Central America is famous for its brightly colored birds. The Amazon jungle in South America is the world's largest rainforest. It has the greatest variety of plants and animals of any

other place on earth. Central Africa contains the world's second largest rainforest. The rainforests of Asia stretch from India in the west to the islands of Java and Borneo in the Pacific Ocean in the east. Australia's rainforests are very dense and lush.



Fifty million tribal peoples live in the rainforests of the world. Much of their living space is being destroyed by logging, mining, and slashes and burn farmers. These people are losing their food and shelter. Three of the larger tribes are the Pygmies, the Huli, and the Yanomani. Pygmies live in Central Africa. The Huli live in Papua New Guinea in the Pacific Ocean. The Yanomani live in South America.

The plants that live in the rainforests provide shelter and food for the animals. They also participate in gas exchanges, and provide much of the world's oxygen supply. Plants compete for sunlight on the ground so some plants

live on the branches of other plants. Aerial plants can get food from the air itself using air roots.

Some interesting animals live in the rainforest. Spider monkeys are very large, almost two feet tall. They like to hang upside down from a tree with four limbs and a tail. They look like a spider and travel at a very high speed through the trees. These monkeys have only four fingers and no thumb. Spider monkeys eat fruits and seeds from high up in the canopy. Unfortunately, hunters are killing many of these monkeys so they may become extinct.

Toucans are colorful birds with short and thick necks. The bright colors on their bill help attract a mate. Their bills are sharp and can tear off pieces of big fruit. They eat lizards and small birds and live in holes in trees. Toucans live in the canopy layer in South and Central America. They are important because they help to scatter the seed from the fruit they eat.

A poison-arrow frog is found in Central and South America too. Its poison is very powerful and can cause paralysis or death. One of these frogs has enough poison to kill one hundred people. Native hunters put the poison on the tips of their arrows.

In summary, rain forests cover about one-sixth of the earth. They receive abundant rainfall each year and the foliage is thick. The rain forests contain many of the plant and animal species of the world. They have four layers. Each layer has its own characteristics, plants, and animals.

1. *Which of these is true?*

- a) There is no sunlight in the emergent layer of the rain forest.
- b) The understory layer has almost no plants.
- c) Very tall trees form the emergent layer.
- d) The forest floor has a lot of sun.

2. *Where can rain forests be found?*

- a) Europe and Asia.
- b) Central Africa and Australia.
- c) The Nile River.
- d) The Mississippi River basin.

3. *Which of these is not true?*

- a) Aerial plants get water from rainfall.
- b) Plants in the rainforest provide oxygen.
- c) Some plants live on the branches of other plants.
- d) Many tribal peoples live in the world's rainforests.

4. *Where do the Pygmies live?*

- a) North America.
- b) Central America.
- c) Asia.
- d) Australia.

5. *Which animal does not live in a rainforest?*

- a) Toucan.
- b) Wolf.
- c) Spider monkey.
- d) Poison-arrow monkey.

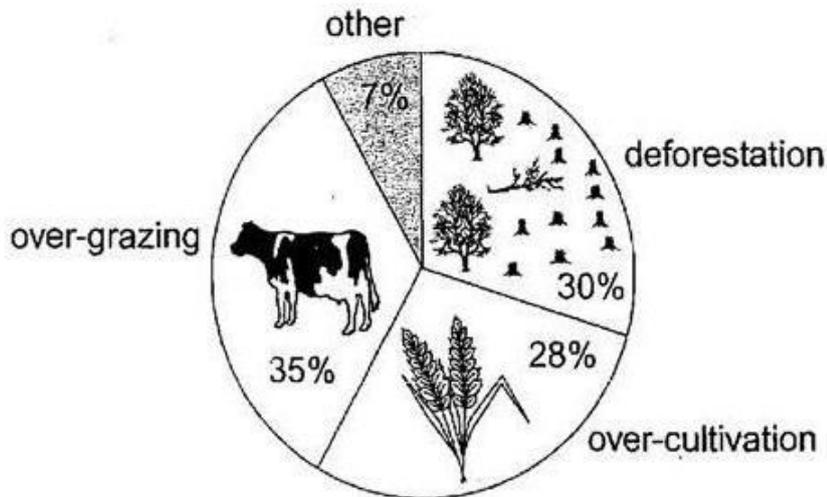
6. *Why are toucans important to the environment?*

- a) They scatter seeds from fruits and berries.
- b) They are pets for people.
- c) They are food for lions.
- d) They eat dangerous insects.

### **Speaking.**

Deforestation caused by human activity is happening in many parts of the world, with serious results for the environment. What do you think can be done to solve this problem? Work in pairs. Discuss the chart “Causes of worldwide land degradation (student A) and bar chart “Clear cutting of forests” (student B).

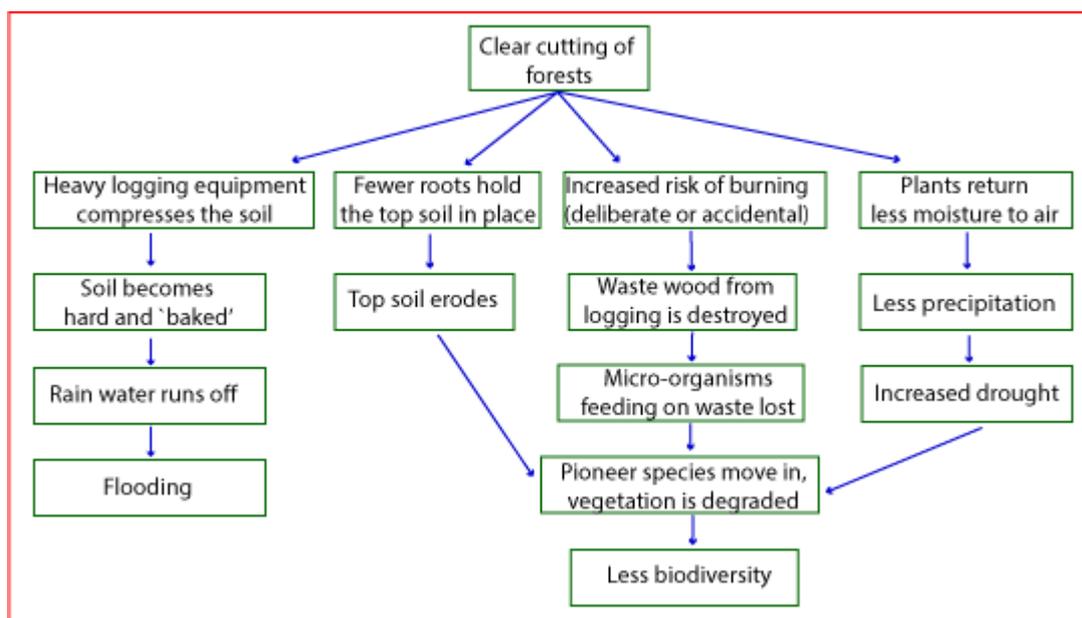
## Causes of worldwide land degradation



## Causes of land degradation by region

| Region        | % land degraded by... |                  |              |                     |
|---------------|-----------------------|------------------|--------------|---------------------|
|               | deforestation         | over-cultivation | over-grazing | Total land degraded |
| North America | 0.2                   | 3.3              | 1.5          | 5%                  |
| Europe        | 9.8                   | 7.7              | 5.5          | 23%                 |
| Oceania*      | 1.7                   | 0                | 11.3         | 13%                 |

\* A large group of islands in the South Pacific including Australia and New Zealand



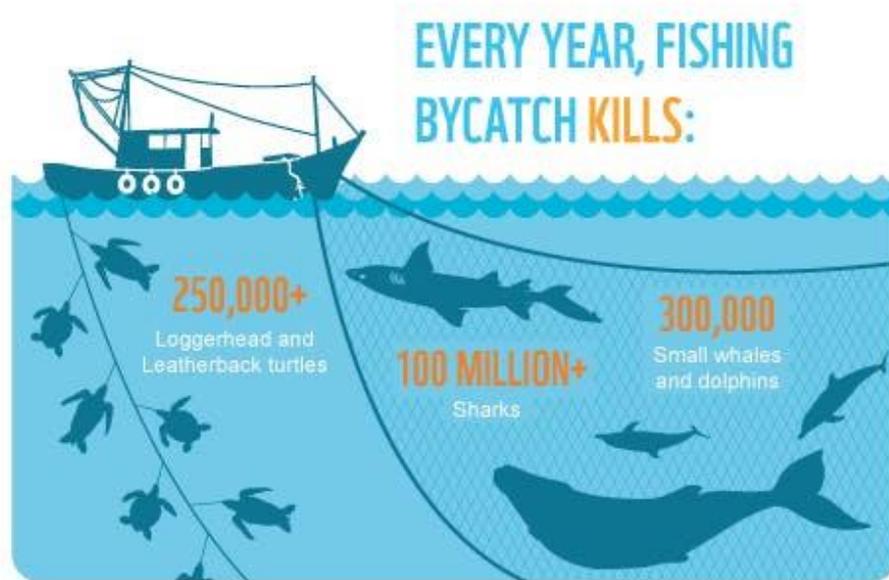
## Unit 3

### Destruction of habitats

#### Text 1

#### Overfishing

A \_\_\_\_\_



Millions of people from all over the globe depend on the oceans for their staple food and income. This automatically implies that thousands of fish and other sea creatures are captured daily from the sea to meet the growing demand for it. As more and more people make seafood a part of their everyday diet, our oceans continue to face the threat of depleting supply of edible sea creatures.

In the past, fishing was more sustainable because fishermen did not have the resources or the technology to tread into the deeper waters at far flung locations. Their vessels were small with limited capacities for stocking fish and the absence of technology like sonar restricted their fish-hunting activities.

Today, however, fishing is a multimillion dollar industry with well-equipped ships and hi-tech facilities that enable fishermen to explore new shores and deeper waters to keep up with the increasing demand for seafood. In fact, the United Nations Food and Agricultural Organization (FAO) describes over 70 percent of the world's fisheries as either "fully exploited," "over exploited" or "significantly depleted." Such has been the effect of overfishing.

B \_\_\_\_\_

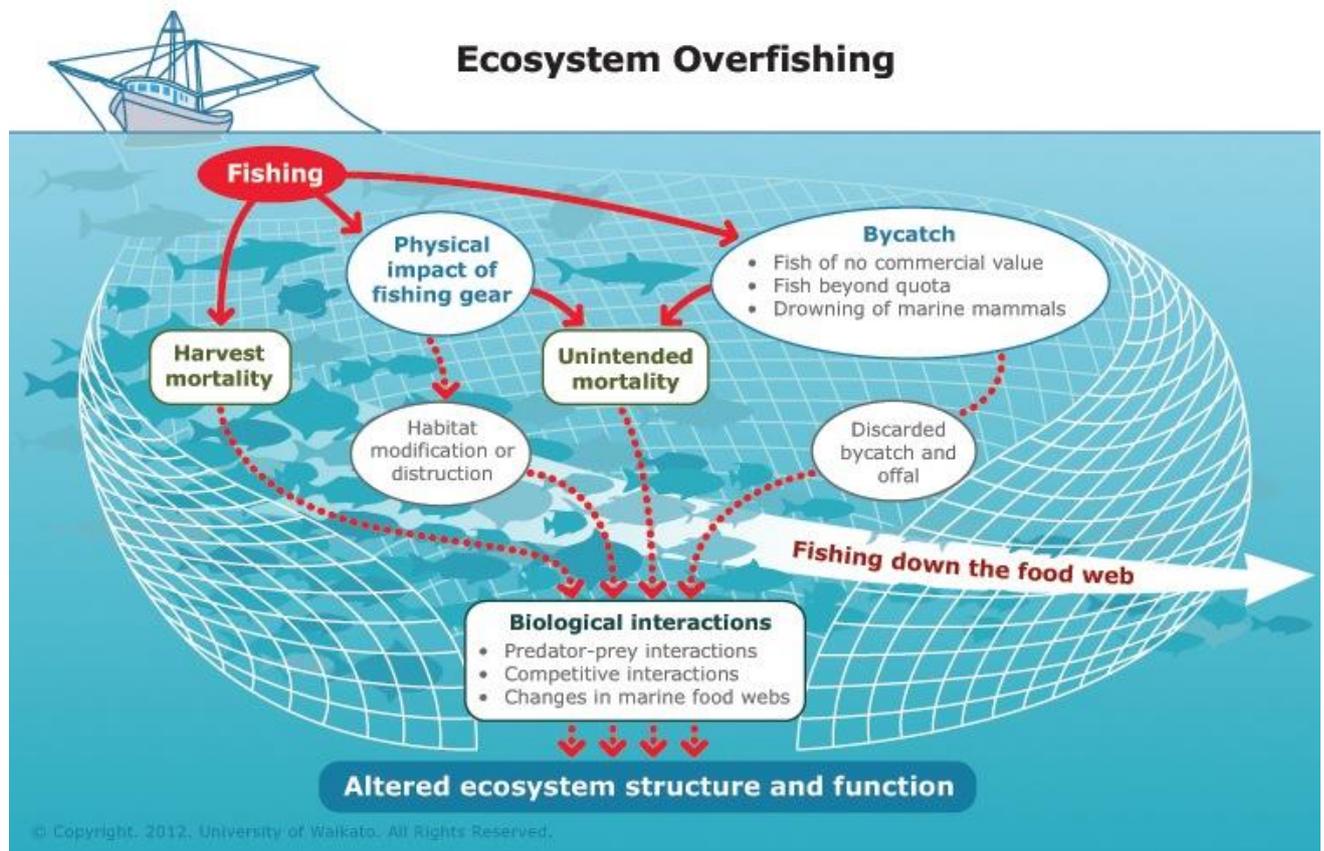
We all know that fish and other aquatic species are a finite resource in our oceans. However, fishermen have started capturing more and more fish at a rate that is much faster than they can reproduce and replenish the water bodies with more fish. Many marine scientists have gone to the extent of saying that the threat faced by our marine ecosystem is much larger than any other environmental threat like increasing pollution. They have also predicted commercial extinction (not fit for fishing) of marine life if this trend continues.

C \_\_\_\_\_

The pelagic fish, which live in the upper parts of the water, are caught by drift netting, whereby a net is suspended from floats and spread between two boats to trap as many fish as possible. Since fish are incapable of swimming backwards, they get caught in the net. There may be a few small fish who can escape through the net's mesh.

Fish that live in deeper water are caught by trawling, whereby a huge net is dragged through the water which traps every creature that comes in its way. The size of the net's mesh is crucial and it is important that very small mesh is banned to spare the young fish before they have had a chance to procreate, for the conservation of fish stock.

D \_\_\_\_\_



We're already witnessing this phenomenon, what with the reduced number of fish that is worth consuming being left behind. Overfishing, typically, leads to a decline in the population of productive fish, which results in lesser stocking of the fish. If overfishing is curtailed, we can hope to revive the declining marine population in a few years. Cutting back on fishery activities will make it possible for fish to breed and produce young ones and this cycle would continue until we have a healthy supply of seafood available again.

E \_\_\_\_\_

Harvest of non-targeted fish or by catch, will give rise to the capturing of sea animals that unintentionally get caught, but are not used or required. These may

include endangered or protected species such as certain marine mammals, or other aquatic species of little or no commercial or recreational value. If caught, they are eventually discarded either at the sea or shore.

F \_\_\_\_\_

Overfishing can have an adverse effect on marine biodiversity. Every single aquatic plant and animal has a role to play when it comes to balancing the ecology. In order to thrive, marine creatures require a certain kind of environment and nutrients, for which they may be dependent on other organisms.

Overfishing can wreak havoc and destroy the environment and marine ecology and completely disrupt the food chain. For example, herring is a vital prey species for the cod. Therefore, when herring are overfished the cod population suffers as well. And this has a chain reaction on other species too. For example, seabirds such as puffins were dependent on the sandeel for their food around the Shetland Islands. However, with the overfishing of sandeels, the colonies of seabirds nesting around Shetland automatically declined.

Therefore, it can be understood that if the food chain breaks at any level, it will have a domino effect on all living organisms in the chain.

G \_\_\_\_\_

As mentioned earlier, millions of people rely on fishing for their livelihood and nutritional needs. For decades, oceans have provided us with a bounty of seafood for these needs, but there is a limit to everything. Unsustainable fishing practices and overfishing over the last few decades have pushed our oceans to the limit and they may now be on the verge of a collapse, thereby affecting the everyday way of life and source of income of those who depend on them. With no productive fish left in the sea to fish, fishermen and fisheries are bound to go out of business in no time.

*1. Questions 1 – 7. Match Headings to Paragraphs. Select the best heading for each paragraph. NB – You have more headings than paragraphs so you will not need to use them all.*

I – Harvest of Untargeted/Protected/Endangered Marine Species.

II – Socio-economic Effect.

III – Ecosystem Changes.

IV – Possible Extinction.

V – What Is Overfishing?

VI – The History of the Fishing Industry.

VII – Reduced Harvests of Targeted Fish.

VIII – Fishing Evolution.

IX – How Commercial Fishing Leads To Overfishing.

X – Solutions to Overfishing.

*2. Multiple Matching (Questions 8 – 13).*

*Decide which section of the text contains the following information.*

- 8) An explanation of how netting systems catch fish.
- 9) A possible outcome of overfishing for fishermen.
- 10) A possible solution to the problem of overfishing.
- 11) A description of how an ecosystem can be affected.
- 12) A comparison between overfishing and another environmental threat.
- 13) A description of how lack of technology can affect fishing capability.

## **Text 2**

### **Zoo Conservation Programs**

#### **THE WORLD ZOO CONSERVATION STRATEGY; THE ROLE OF THE ZOOS AND AQUARIA OF THE WORLD IN GLOBAL CONSERVATION <sup>4</sup>**

- ❑ **A paper was written by a collaboration between the IUDZG, CBSC, IUCN and SSC**
- ❑ **It was meant to set out the future for zoos**
- ❑ **The ultimate goal is that in the future zoo collections will be co-coordinated globally**
- ❑ **But for now they look to base zoo collections on conservation objectives**
- ❑ **Suggesting that ex-situ zoo populations should be managed so as to support the survival of species in the wild**

One of London Zoo's recent advertisements caused me some irritation, so patently did it distort reality. Headlined "Without zoos, you might as well tell these animals to get stuffed", it was bordered with illustrations of several endangered species and went on to extol the myth that without zoos like London Zoo these animals "will almost certainly disappear forever". With the zoo world's rather mediocre record on conservation, one might be forgiven for being slightly skeptical about such an advertisement.

Zoos were originally created as places of entertainment, and their suggested involvement with conservation didn't seriously arise until about 30 years ago, when the Zoological Society of London held the first formal international meeting on the

subject. Eight years later, a series of world conferences took place, entitled “The Breeding of Endangered Species”, and from this point onwards conservation became the zoo community’s buzzword. This commitment has now been clearly defined in The World Zoo Conservation Strategy (WZCS, September 1993), which although an important and welcome document does seem to be based on an unrealistic optimism about the nature of the zoo industry.

The WZCS estimates that there are about 10,000 zoos in the world, of which around 1,000 represent a core of quality collections capable of participating in coordinated conservation programs. This is probably the document’s first failing, as I believe that 10,000 is a serious underestimate of the total number of places masquerading as zoological establishments. Of course, it is difficult to get accurate data but, to put the issue into perspective; I have found that, in a year of working in Eastern Europe, I discover fresh zoos on almost a weekly basis.

The second flaw in the reasoning of the WZCS document is the naive faith it places in its 1,000 core zoos. One would assume that the caliber of these institutions would have been carefully examined, but it appears that the criterion for inclusion on this select list might merely be that the zoo is a member of a zoo federation or association. This might be a good starting point, working on the premise that members must meet certain standards, but again the facts don’t support the theory. The greatly respected American Association of Zoological Parks and Aquariums (AAZPA) has had extremely dubious members, and in the UK the Federation of Zoological Gardens of Great Britain and Ireland has

Occasionally had members that have been roundly censured in the national press. These include Robin Hill Adventure Park on the Isle of Wight, which many considered the most notorious collection of animals in the country. This establishment, which for years was protected by the Isle’s local council (which viewed it as a tourist amenity), was finally closed down following a damning report by a veterinary inspector appointed under the terms of the Zoo Licensing Act 1981. As it was always a collection of dubious repute, one is obliged to reflect upon the standards that the Zoo Federation sets when granting membership. The situation is even worse in developing countries where little money is available for redevelopment and it is hard to see a way of incorporating collections into the overall scheme of the WZCS.

Even assuming that the WZCS’s 1,000 core zoos are all of a high standard complete with scientific staff and research facilities, trained and dedicated keepers, accommodation that permits normal or natural behavior, and a policy of co-operating fully with one another what might be the potential for conservation? Colin Tudge, author of *Last Animals at the Zoo* (Oxford University Press, 1992), argues that “if the world’s zoos worked together in co-operative breeding programs, then even without further expansion they could save around 2,000 species of endangered land vertebrates’. This seems an extremely optimistic proposition from a man who must be aware of the failings and weaknesses of the zoo industry the man who, when a member of the council of London Zoo, had to persuade the zoo to devote

more of its activities to conservation. Moreover, where are the facts to support such optimism?

Today approximately 16 species might be said to have been “saved” by captive breeding programs, although a number of these can hardly be looked upon as resounding successes. Beyond that, about a further 20 species are being seriously considered for zoo conservation programs. Given that the international conference at London Zoo was held 30 years ago, this is pretty slow progress, and a long way off Tudge’s target of 2,000.

*1. Do the following statements agree with the views of the writer in Reading Passage 3?*

Y if the statement agrees with the writer

N if the statement contradicts the writer

NG if it is impossible to say what the writer thinks about this

- 1) London Zoo’s advertisements are dishonest.
- 2) Zoos made an insignificant contribution to conservation up until 30 years ago.
- 3) The WZCS document is not known in Eastern Europe.
- 4) Zoos in the WZCS select list were carefully inspected.
- 5) No-one knew how the animals were being treated at Robin Hill Adventure Park.
- 6) Colin Tudge was dissatisfied with the treatment of animals at London Zoo.
- 7) The number of successful zoo conservation programmes is unsatisfactory.

*2. Questions 8 – 10. Choose the correct answer*

*8) What were the objectives of the WZCS document?*

- a) to improve the calibre of zoos worldwide;
- b) to identify zoos suitable for conservation practice;
- c) to provide funds for zoos in underdeveloped countries;
- d) to list the endangered species of the world.

*9) Why does the writer refer to Robin Hill Adventure Park?*

- a) to support the Isle of Wight local council;
- b) to criticise the 1981 Zoo Licensing Act;
- c) to illustrate a weakness in the WZCS document;
- d) to exemplify the standards in AAZPA zoos.

*10) What word best describes the writer’s response to Colin Tudge’s prediction on captive breeding programmes?*

- a) disbelieving;
- b) impartial;
- c) prejudiced;
- d) accepting.

3. Questions 11-13. The writer mentions a number of factors which lead him to doubt the value of the WZCS document Which THREE of the following factors are mentioned?

List of Factors:

- a) the number of unregistered zoos in the world;
- b) the lack of money in developing countries;
- c) the actions of the Isle of Wight local council;
- d) the failure of the WZCS to examine the standards of the “core zoos”;
- e) the unrealistic aim of the WZCS in view of the number of species “saved” to date;
- f) the policies of WZCS zoo managers.

### Text 3

#### A Wonder Plant

## Bamboo Seeds

Bamboo plants usually flower infrequently, sometimes only every 120 years.

Within a few years, every plant of a particular species around the world flowers at the same time.

After setting seed, plants will often die. Some species will recover within a few years.

Occasional sporadic flowering can occur but usually poses no threat to the plant nor produces viable seed.

Thus, bamboo seed is usually rare and hard to find.

*The wonder plant with an uncertain future: more than a billion people rely on bamboo for either their shelter or income, while many endangered species depend on it for their survival. Despite its apparent abundance, a new report says that species of bamboo may be under serious threat.*

A) Every year, during the rainy season, the mountain gorillas of Central Africa migrate to the foothills and lower slopes of the Virunga Mountains to graze on bamboo. For the 650 or so that remain in the wild, it's a vital food source. Although there are almost 150 types of plant, as well as various insects and other invertebrates, bamboo accounts for up to 90 percent of their diet at this time of year. Without it, says Ian Redmond, chairman of the Ape Alliance, their chances of survival would be reduced significantly. Gorillas aren't the only locals keen on bamboo. For the people who live close to the Virungas, it's a valuable and versatile raw material used for building houses and making household items such as mats and baskets. But in the past 100 years or so, resources have come under increasing pressure as populations have exploded and large areas of bamboo forest have been cleared to make way for farms and commercial plantations.

B) Sadly, this isn't an isolated story. All over the world, the ranges of many bamboo species appear to be shrinking, endangering the people and animals that depend upon them. But despite bamboo's importance, we know surprisingly little about it. A recent report published by the UN Environment Program (UNEP) and the International Network for Bamboo and Rattan (INBAR) has revealed just how profound is our ignorance of global bamboo resources, particularly in relation to conservation. There are almost 1,600 recognized species of bamboo, but the report concentrated on the 1,200 or so woody varieties distinguished by the strong stems, or culms, that most people associate with this versatile plant. Of these, only 38 'priority species' identified for their commercial value have been the subject of any real scientific research, and this has focused mostly on matters relating to their viability as a commodity. This problem isn't confined to bamboo. Compared to the work carried out on animals, the science of assessing the conservation status of plants is still in its infancy. "People have only started looking hard at this during the past 10-15 years, and only now are they getting a handle on how to go about it systematically," says Dr. Valerie Kapos, one of the report's authors and a senior adviser in forest ecology and conservation to the UNEP.

C) Bamboo is a type of grass. It comes in a wide variety of forms, ranging in height from 30 centimeters to more than 40 meters. It is also the world's fastest-growing woody plant; some species can grow more than a meter in a day. Bamboo's ecological role extends beyond providing food and habitat for animals. Bamboo tends to grow in stands made up of groups of individual plants that grow from root systems known as rhizomes. Its extensive rhizome systems, which tie in the top layers of the soil, are crucial in preventing soil erosion. And there is growing evidence that bamboo plays an important part in determining forest structure and dynamics. "Bamboo's pattern of mass flowering and mass death leaves behind large areas of dry biomass that attract wildfire," says Kapos. "When these burn, they create patches of open ground within the forest far bigger than would be left by a fallen tree." Patchiness helps to preserve diversity because certain plant species do better during the early stages of regeneration when there are gaps in the canopy.

*D)* However, bamboo's most immediate significance lies in its economic value. Modern processing techniques mean that it can be used in a variety of ways, for example, as flooring and laminates. One of the fastest growing bamboo products is paper - 25 percent of paper produced in India is made from bamboo fiber and in Brazil, 100,000 hectares of bamboos are grown for its production. Of course, bamboo's main function has always been in domestic applications, and as a locally traded commodity, it's worth about \$4.5 billion annually. Because of its versatility, flexibility and strength (its tensile strength compares to that of some steel), it has traditionally been used in construction. Today, more than one billion people worldwide live in bamboo houses. Bamboo is often the only readily available raw material for people in many developing countries, says Chris Stapleton, a research associate at the Royal Botanic Gardens. "Bamboo can be harvested from forest areas or grown quickly elsewhere, and then converted simply without expensive machinery or facilities," he says. "In this way, it contributes substantially to poverty alleviation and wealth creation."

*E)* Given bamboo's value in economic and ecological terms, the picture painted by the UNEP report is all the more worrying. But keen horticulturists will spot an apparent contradiction here. Those who've followed the recent vogue for cultivating exotic species in their gardens will point out that if it isn't kept in check, bamboo can cause real problems. "In a lot of places, the people who live with bamboo don't perceive it as being endangered in any way," says Kapos. "In fact, a lot of bamboo species are actually very invasive if they've been introduced." So why are so many species endangered? There are two separate issues here, says Ray Townsend, vice president of the British Bamboo Society and arboretum manager at the Royal Botanic Gardens. "Some plants are threatened because they can't survive in the habitat - they aren't strong enough or there aren't enough of them, perhaps. But bamboo can take care of itself - it is strong enough to survive if left alone. What is under threat is its habitat. "It is the physical disturbance that is the threat to bamboo, says Kapos. "When forest goes, it is converted into something else: there isn't anywhere for forest plants such as bamboo to grow if you create a cattle pasture."

*F)* Around the world, bamboo species are routinely protected as part of forest eco-systems in national parks and reserves, but there is next to nothing that protects bamboo in the wild for its own sake. However, some small steps are being taken to address this situation. The UNEP-INBAR report will help conservationists to establish effective measures aimed at protecting valuable wild bamboo species. Townsend, too, sees the UNEP report as an important step forward in promoting the cause of bamboo conservation. "Until now, bamboo has been perceived as a second-class plant. When you talk about places such as the Amazon, everyone always thinks about the hardwoods. Of course, these are significant, but there is a tendency to overlook the plants they are associated with, which are often bamboo species. In many ways, it is the most important plant known to man. I can't think of another plant that is used so much and is so commercially important in so many

countries. "He believes that the most important first step is to get scientists into the field. "We need to go out there, look at these plants and see how they survive and then use that information to conserve them for the future."

1. *Questions 1-7. Reading Passage has six sections A-F. Which section contains the following information? Match the correct number with passage in the text. NB. You may use any letter more than once.*

- 1) Comparison of bamboo with other plant species.
- 2) Commercial products of bamboo.
- 3) Limited extent of existing research.
- 4) A human development that destroyed large areas of bamboo.
- 5) How bamboos are put to a variety of uses.
- 6) An explanation of how bamboo can help the survival of a range of plants.
- 7) The methods used to study bamboo.

2. *Questions 8-11. Use the information in the passage to match the people (listed A-D) with opinions or deeds below. You may use any letter more than once.*

- a) Ian Redmond.
- b) Valerie Kapos.
- c) Ray Townsend.
- d) Chris Stapleton.

- 8) Destroying bamboo jeopardizes to wildlife.
- 9) People have very confined knowledge of bamboo.
- 10) Some people do not think that bamboo is endangered.
- 11) Bamboo has loads of commercial potentials.

3. *Questions 12-13. Answer the questions below using NO MORE THAN TWO WORDS from the passage for each answer.*

- 12) What environmental problem does the unique root system of bamboo prevent?
- 13) Which bamboo product is experiencing market expansion?

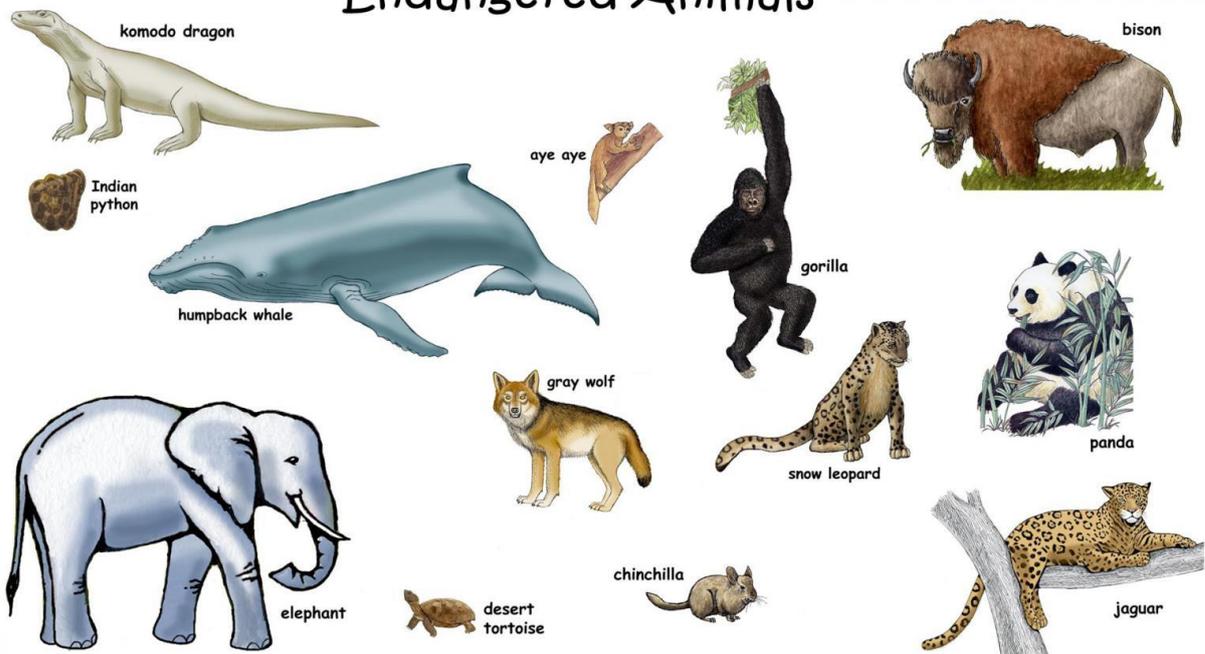
#### **Text 4**

#### **Endangered species**

Since the world has become industrialized, there has been an increase in the number of animal species that have either become extinct or have neared extinction. Bengal tigers, for instance, which once roamed the jungles in vast numbers, now number only about 2,300, and by 5 the year 2025 their population is estimated to be down to zero. What is alarming about the case of the Bengal tiger is that this extinction will have been caused almost entirely by poachers who, according to some sources, are not interested in material gain but in personal gratification. This is

an example of the callousness that is part 10 of what is causing the problem of extinction. Animals like the Bengal tiger, as well as other endangered species, are a valuable part of the world's ecosystem. International laws protecting these animals must be enacted to ensure their survival, and the survival of our planet. 15 Countries around the world have begun to deal with the problem in various ways. Some countries, in order to circumvent the problem, have allocated large amounts of land to animal reserves. They then charge admission to help defray the costs of maintaining the parks, 20 and they often must also depend on world organizations for support. With the money they get, they can invest in equipment and patrols to protect the animals. Another solution that is an attempt to stem the tide of animal extinction is an international boycott of products made from endangered species. This seems fairly effective, but it 25 will not, by itself, prevent animals from being hunted and killed.

## Endangered Animals



1. *What is the main topic of the passage?*

- a) the Bengal tiger;
- b) international boycotts;
- c) endangered species;
- d) problems with industrialization.

2. *Which of the following is closest in meaning to the word "alarming" in line*

6?

- a) dangerous;
- b) serious;
- c) gripping;

d) distressing.

6? 3. Which of the following could best replace the word "case" as used in line 6?

- a) act;
- b) situation;
- c) contrast;
- d) trade.

4. The word "poachers" as used in line 7 could be best replaced by which of the following?

- a) illegal hunters;
- b) enterprising researchers;
- c) concerned scientists;
- d) trained hunters.

5. The word "callousness" in line 9 could best be replaced by which of the following?

- a) indirectness;
- b) independence;
- c) incompetence;
- d) insensitivity.

6. The above passage is divided into two paragraphs in order to contrast

- a) a problem and a solution;
- b) a statement and an illustration;
- c) a comparison and a contrast;
- d) specific and general information.

7. What does the word "this" refer to in line 9?

- a) endangered species that are increasing;
- b) Bengal tigers that are decreasing;
- c) poachers who seek personal gratification;
- d) sources that may not be accurate.

8. Where in the passage does the author discuss a cause of extinction?

- a) Since the world . . . down to zero.
- b) What is alarming . . . personal gratification.
- c) Country around . . . for support.
- d) With the money . . . endangered species.

9. Which of the following could best replace the word "allocated" in line 17?

- a) set aside;
- b) combined;
- c) organized;
- d) taken off.

10. The word "defray" in line 19 is closest in meaning to which of the following?

- a) lower;
- b) raise;

- c) make a payment on;
- d) make an investment toward.

11. The author uses the phrase "stem the tide" in line 22-23 to mean

- a) touch;
- b) stop;
- c) tax;
- d) save.

12. Which of the following best describes the author's attitude?

- a) forgiving;
- b) concerned;
- c) vindictive;
- d) surprised.

### Text 5

Read the text and complete the gaps with words from the box.

|                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------|
| extinction    sanctuaries    deforestation    die    Fauna    measures    pollution<br>hunting    laws    ecosystem |
|---------------------------------------------------------------------------------------------------------------------|

From a long time humans are harming flora and \_\_\_\_ (1) and due to this reason many animal species are losing their population and are at the danger of extinction. In this essay I am going to discuss the causes of this loss and the \_\_\_\_ (2) which can be taken to preserve wildlife.

The first and foremost reason behind this problem is \_\_\_\_ (4). People are killing animals for their own needs and deeds. This put these animals at the danger of \_\_\_\_ (5). In addition to this, people harm the natural habitat of wild animals by cutting down the trees for the sake of development, which result into \_\_\_\_ (5). Since people snatch their shelter and homes that's why they find it hard to survive and consequently \_\_\_\_ (6). Moreover, people use a lot of pesticides and insecticides which reaches into the food chain and ultimately harm animals.

Secondly, the \_\_\_\_ (7) caused by mankind in water, air and land harm these creatures. For instance, the plastic disposed on land is eaten by some animals that lead to their death.

However, government should look after this issue and it should implement some strict \_\_\_\_ (8) against hunting and deforestation. Moreover, there should be more zoos and wildlife \_\_\_\_ (9) to preserve animals from natural disasters and to increase their number through breeding.

At the end, I can conclude that animals play an indispensable role in our \_\_\_\_ (10) and they rotate the food chain. So it is our duty to preserve these creatures instead of harming them.

## Text 6

# ENDANGERED ANIMALS OF THE UNITED STATES



### Paragraph 1.

Effective monitoring of endangered species is a key to their survival. Studying the movement, range and habits of wild animals is essential in order to ensure their habitat remains free from poachers and development. Traditional methods of monitoring wild animals, especially large ones, include radio-tagging. To do this, individual animals must at first be captured or sedated so that collars or tags can be fitted.

### Paragraph 2.

One organization that adopted this technique was Wild Track. In the late 1990s, the team was using radio-collars to monitor black rhino in Namibia. However, the team soon realized that the chemicals used to immobilize the rhino in order to fit the collars had a negative impact on female fertility. Not only that but a large proportion of the radio-collars failed within the first 6 months and had to be replaced. Moreover, as animals grew, the collars would tighten, irritating or even hurting the animal. The method was not only expensive, but it was also

counterproductive, as it altered the rhino's behavior, thus invalidating the data collected.

Paragraph 3.

At the same time, the team was worked alongside local trackers. Animal tracking is one of the oldest human skills, and these experts had years of experience in identifying individual animals by their footprints. They could effectively create a true picture of individual rhinos' activities without the use of any invasive techniques. Consequently, the team was interested to know whether the trackers' knowledge could be successfully translated into an effective, computerized technique for monitoring animal movement.

Paragraph 4.

Within each species, each individual has its own unique foot characteristics, in the same way that humans have fingerprints. Thus, if an animal is sighted and identified just once, and the characteristics of its footprints properly photographed and measured, its footprint can be recognized whenever it is sighted again. If done repeatedly, conservationists can draw up a database of all, or at least a significant proportion of the individuals within the population. After that conservationists can use it to identify an animal and its movements by its print. The data gathered can be used for a range of purposes, for example to monitor biodiversity. Wild Track is currently using footprint identification technology in Greece to study the potential effect of a large highway construction through brown bear habitat.

Paragraph 5.

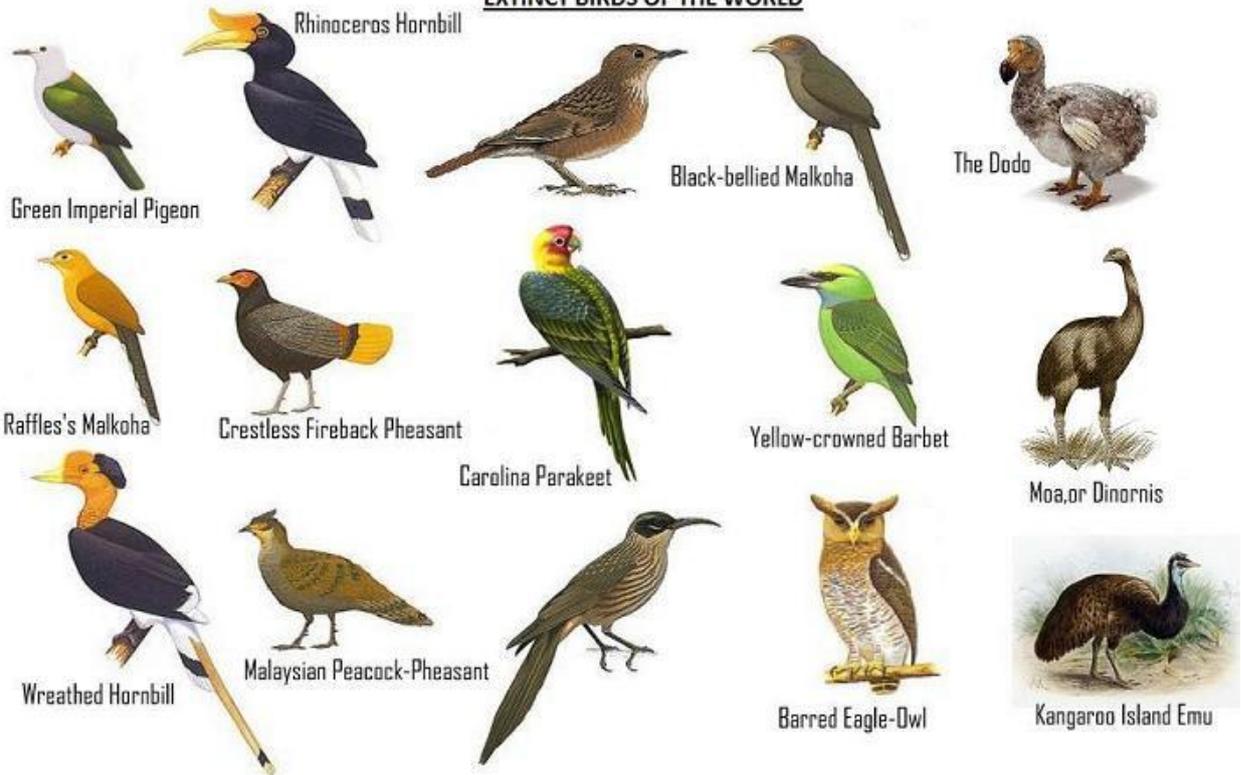
Identifying an animal from its footprint is not without its challenges, however, as each time the individual places its foot on the ground, it leaves a slightly different track, according to the type of ground it is walking on, moisture levels and the way it is moving. In order to account for these variations, it is necessary to collect several tracks from each individual, including impressions from all four feet, on a range of surfaces.

*1. Choose the best title for each paragraph below. There is one title you don't need.*

- 1) Paragraph 1.
- 2) Paragraph 2.
- 3) Paragraph 3.
- 4) Paragraph 4.
- 5) Paragraph 5.

- a) The disadvantages of traditional techniques.
- b) How footprint identification technology works.
- c) The negative impact of development on wild animals.
- d) Problems involved with footprint identification technology.
- e) A traditional and effective monitoring technique.
- f) The importance of wildlife monitoring.

**EXTINCT BIRDS OF THE WORLD**



2. Choose the five statements below that are **TRUE** according to the information given in the text.

- 6) WildTrack managed to radio-tag rhinos without sedating them.
- 7) WildTrack found that the female rhinos which had been sedated had fewer babies.
- 8) The information Wildtrack collected about rhinos using radio-controllers was useless.
- 9) The trackers had the idea of combining their knowledge with a computer system.
- 10) Footprint Identification Technology involves taking a photo of a footprint, taking its measurements and storing the information on a database.
- 11) For Footprint Identification Technology to work, it is necessary to see the animal which made the footprint at least once.
- 12) Footprint Identification Technology is best suited to the study of large, heavy animals.
- 13) An animal's footprints look the same whatever ground they are walking on.

3. Complete the sentences with a word, phrase or number from the text (maximum three words).

14) These days most people choose to run because of the \_\_\_\_ but monitoring them can help reduce this risk.

15) Workers at Wildtrack were horrified to realise that the collars they were fitting on the rhinos were \_\_\_\_.

16) In many cases, workers at Wildtrack had to replace radio-collars within 6 months because \_\_\_\_.

17) Footprint Identification Technology can be used to \_\_\_\_ and assess the impact of large-scale construction.

18) To counter the problems experienced in Footprint identification Technology, users must remember to \_\_\_\_.

### **Speaking.**

Speak about the following topic.

1) Forests are the lungs of the earth. Destruction of the world's forests amounts to death of the world we currently know. To what extent do you agree or disagree?

2) Animals habitats have been destroyed and some animals species. For example, the tigers have become endangered. Why does this happen? What can be done to protect this type of animals?

3) Wild animals have no use in the 21<sup>st</sup> century and trying to preserve animals now is just wastage of money. To what extent do you agree or disagree with this opinion?

4) Some people think that zoos are all cruel and should be closed down. Others however believe that zoos can be useful in protecting wild animals. Discuss both opinions and give your own opinion.

Give reasons for your answer and include any relevant examples from your own knowledge or experience.

## **Unit 4**

### **Pollution**

#### **Text 1**

#### **A polluted world**



The environment has been polluted in many different ways. The three major ways are water, land and air pollution.

Water pollution is the contamination of lakes, caused by human activities. It can be harmful to organisms and plants which live in the water. Water pollution occurs when wastes are discharged from waste water treatment plants. Other known causes are factory wastes or leaking underground tanks. These can be chemical substances that are toxic. The polluted water can cause cholera and typhoid fever. Water pollution has led to the deaths of more than 14,000 people daily.

Land pollution is the destruction of the earth's land surfaces. It is often caused by human activities such as careless disposal of wastes, over-mining of minerals and wrong use of land for planting. All these will affect our health in the long run. They will lead to all kinds of diseases such as cancer, heart disease and breathing problems. Land pollution also brings about natural disasters such as flash floods and landslides.

Air pollution is also the result of human activity where chemicals and other dangerous materials are released into the air. This happens through the release of carbon monoxide gas from exhaust pipes of motor vehicles. Other gases such as sulphur oxides are released from the burning of coal and oil. High air pollution levels can cause damage to the environment. It also brings discomfort to humans and other living organisms. In the long term, air pollution can cause serious breathing problems, lung cancer and heart disease.

*Based on the passage, answer the following questions.*

*1. How many ways is the environment being polluted?*

- a) Two.
- b) Three.
- c) Four.
- d) Five.

*2. What type of diseases caused by polluted water?*

- a) Cholera and typhoid fever.
- b) Breathing problems and cancer.
- c) Heart disease and typhoid fever.
- d) Cholera and breathing problems.

*3. The word Itin the passage refers to the*

- a) diseases;
- b) land pollution;
- c) air pollution;
- d) water pollution.

*4. Which of the following causes land pollution?*

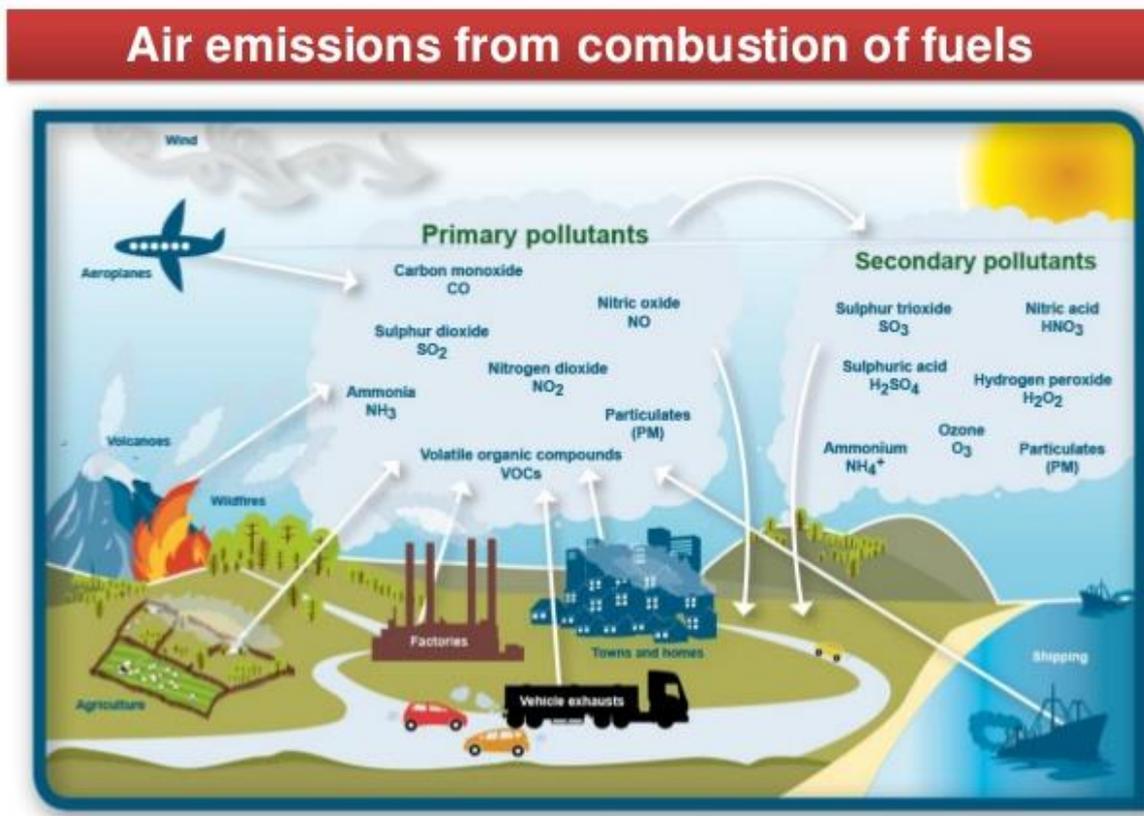
- a) Toxic factory wastes.
- b) Over-mining of minerals.
- c) Burning of coal and oil.
- d) Leaking underground tanks.

5. From the passage, we know that air pollution:

- a) bring about typhoid fever;
- b) happens when lands are being destroyed;
- c) takes place when lakes are contaminated;
- d) happens when exhaust pipes release carbon monoxide.

## Text 2

### Air pollution



### Energy use is the major source of man-made air emissions

Part 1.

A) Air pollution is increasingly becoming the focus of government and citizen concern around the globe. From Mexico City and New York to Singapore and Tokyo, new solutions to this old problem are being proposed, Mailed and implemented with ever increasing speed. It is feared that unless pollution reduction measures are able to keep pace with the continued pressures of urban growth, air quality in many of the world's major cities will deteriorate beyond reason.

B) Action is being taken along several fronts: through new legislation, improved enforcement and innovative technology. In Los Angeles, state regulations are forcing manufacturers to try to sell ever cleaner cars: their first of the cleanest titled "Zero Emission Vehicles", have to be available soon, since they are intended to make up 2 percent of sales in 1997. Local authorities in London are campaigning to be allowed to enforce anti-pollution laws themselves; at present only the police

have the power to do so, but they tend to be busy elsewhere. In Singapore, renting out road space to users is the way of the future.

C) When Britain's Royal Automobile Club monitored the exhausts of 60,000 vehicles; it found that 12 percent of them produced more than half the total pollution. Older cars were the worst offenders; though a sizeable number of quite new cars were also identified as gross polluters, they were simply badly tuned. California has developed a scheme to get these gross polluters off the streets: they offer a flat \$700 for any old, run-down vehicle driven in by its owner. The aim is to remove the heaviest-polluting, most decrepit vehicles from the roads.

D) As part of a European Union environmental program, a London council is resting an infra-red spectrometer from the University of Denver in Colorado. It gauges the pollution from a passing vehicle - more useful than the annual stationary test that is the British standard today - by bouncing a beam through the exhaust and measuring what gets blocked. The council's next step may be to link the system to a computerized video camera able to read number plates automatically.

E) The effort to clean up cars may do little to cut pollution if nothing is done about the tendency to drive them more. Los Angeles has some of the world's cleanest cars - far better than those of Europe - but the total number of miles those cars drive continues to grow. One solution is car-pooling, an arrangement in which a number of people who share the same destination share the use of one car. However, the average number of people in a car on the freeway in Los Angeles, which is 1.0, has been falling steadily. Increasing it would be an effective way of reducing emissions as well as easing congestion. The trouble is, Los Angelenos seem to like being alone in their cars.

F) Singapore has for a while had a scheme that forces drivers to buy a badge if they wish to visit a certain part of the city. Electronic innovations make possible increasing sophistication: rates can vary according to road conditions, time of day and so on. Singapore is advancing in this direction, with a city-wide network of transmitters to collect information and charge drivers as they pass certain points. Such road-pricing, however, can be controversial. When the local government in Cambridge, England, considered introducing Singaporean techniques, it faced vocal and ultimately successful opposition.

#### Part 2.

The scope of the problem facing the world's cities is immense. In 1992, the United Nations Environmental Program and the World Health Organization (WHO) concluded that all of a sample of twenty megacities - places likely to have more than ten million inhabitants in the year 2000 - already exceeded the level the WHO deems healthy in at least one major pollutant. Two-thirds of them exceeded the guidelines for two, seven for three or more.

Of the six pollutants monitored by the WHO - carbon dioxide, nitrogen dioxide, ozone, sulphur dioxide, lead and particulate matter - it is this last category that is attracting the most attention from health researchers. PM10, a sub-category of particulate matter measuring ten-millionths of a meter across, has been

implicated in thousands of deaths a year in Britain alone. Research being conducted in two counties of Southern California is reaching similarly disturbing conclusions concerning this little-understood pollutant.

A worldwide rise in allergies, particularly asthma, over the past four decades is now said to be linked with increased air pollution. The lungs and brains of children who grow up in polluted air offer further evidence of its destructive power the old and ill; however, are the most vulnerable to the acute effects of heavily polluted stagnant air. It can actually hasten death, so it did in December 1991 when a cloud of exhaust fumes lingered over the city of London for over a week.

The United Nations has estimated that in the year 2000 there will be twenty-four mega-cities and a further eighty-five cities of more than three million people. The pressure on public officials, corporations and urban citizens to reverse established trends in air pollution is likely to grow in proportion with the growth of cities themselves. Progress is being made. The question, though, remains the same: 'Will change happen quickly enough?'

*1. Questions 1-5. Look at the following solutions (Questions 1-5) and locations. Match each solution with one location. NB You may use any location more than once.*

### **SOLUTIONS**

- 1) Manufacturers must sell cleaner cars.
- 2) Authorities want to have the power to enforce anti-pollution laws.
- 3) Drivers will be charged according to the roads they use.
- 4) Moving vehicles will be monitored for their exhaust emissions.
- 5) Commuters are encouraged to share their vehicles with others.

### **Locations**

Singapore  
Tokyo  
London  
New York  
Mexico City  
Cambridge  
Los Angeles

*2. Questions 6-10. Do the following statements reflect the claims of the writer in Reading Passage?*

- YES            if the statement reflects the claims of the writer  
NO             if the statement contradicts the claims of the writer  
NOT GIVEN   if it is impossible to say what the writer thinks about this

6) According to British research, a mere twelve percent of vehicles tested produced over fifty percent of total pollution produced by the sample group.

7) It is currently possible to measure the pollution coming from individual vehicles whilst they are moving.

8) Residents of Los Angeles are now tending to reduce the yearly distances they travel by car.

9) Car-pooling has steadily become more popular in Los Angeles in recent years.

10) Charging drivers for entering certain parts of the city has been successfully done in Cambridge, England.

3. *Questions 11-13. Choose the appropriate letters A—D.*

11) *How many pollutants currently exceed WHO guidelines in all mega cities studied?*

- a) one;
- b) two;
- c) three;
- d) seven.

12) *Which pollutant is currently the subject of urgent research?*

- a) nitrogen dioxide;
- b) ozone;
- c) lead;
- d) particulate matter.

13) *Which of the following groups of people are the most severely affected by intense air pollution?*

- a) allergy sufferers;
- b) children;
- c) the old and ill;
- d) asthma sufferers.

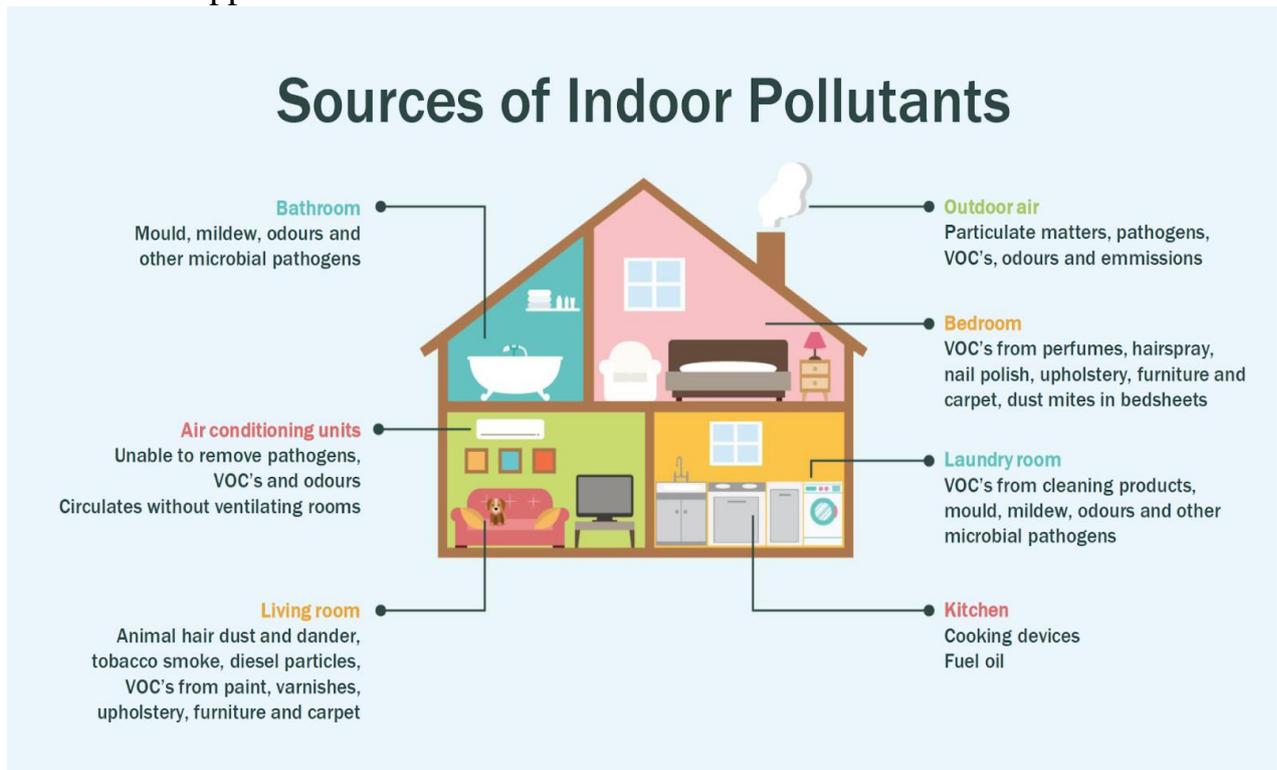
### **Text 3**

#### **Indoor Pollution**

Since the early eighties, we have been only too aware of the devastating effects of large-scale environmental pollution. Such pollution is generally the result of poor government planning in many developing nations or the short-sighted, selfish policies of the already industrialized countries which encourage a minority of the world's population to squander the majority of its natural resources.

While events such as the deforestation of the Amazon jungle or the nuclear disaster in Chernobyl continue to receive high media exposure, as do acts of environmental sabotage, it must be remembered that not all pollution is on this grand scale. A large proportion of the world's pollution has its source much closer to home. The recent spillage of crude oil from an oil tanker accidentally discharging its cargo straight into Sydney Harbor not only caused serious damage to the harbor

foreshores but also created severely toxic fumes which hung over the suburbs for days and left the angry residents wondering how such a disaster could have been allowed to happen.



Avoiding pollution can be a fulltime job. Try not to inhale traffic fumes; keep away from chemical plants and building sites; wear a mask when cycling. It is enough to make you want to stay at home. But that, according to a growing body of scientific evidence, would also be a bad idea. Research shows that levels of pollutants such as hazardous gases, particulate matter and other chemical 'nasties' are usually higher indoors than out, even in the most polluted cities. Since the average American spends 18 hours indoors for every hour outside, it looks as though many environmentalists may be attacking the wrong target.

The latest study, conducted by two environmental engineers, Richard Corsi and Cynthia Howard-Reed, of the University of Texas in Austin, and published in *Environmental Science and Technology*, suggests that it is the process of keeping clean that may be making indoor pollution worse. The researchers found that baths, showers, dishwashers and washing machines can all be significant sources of indoor pollution, because they extract trace amounts of chemicals from the water that they use and transfer them to the air.

Nearly all public water supplies contain very low concentrations of toxic chemicals, most of them left over from the otherwise beneficial process of chlorination. Dr. Corsi wondered whether they stay there when water is used, or whether they end up in the air that people breathe. The team conducted a series of experiments in which known quantities of five such chemicals were mixed with water and passed through a dishwasher, a washing machine, a shower head inside a shower stall or a tap in a bath, all inside a specially designed chamber. The levels of

chemicals in the effluent water and in the air extracted from the chamber were then measured to see how much of each chemical had been transferred from the water into the air.

The degree to which the most volatile elements could be removed from the water, a process known as chemical stripping, depended on a wide range of factors, including the volatility of the chemical, the temperature of the water and the surface area available for transfer. Dishwashers were found to be particularly effective: the high-temperature spray, splashing against the crockery and cutlery, results in a nasty plume of toxic chemicals that escape when the door is opened at the end of the cycle.

In fact, in many cases, the degree of exposure to toxic chemicals in tap water by inhalation is comparable to the exposure that would result from drinking the stuff. This is significant because many people are so concerned about water-borne pollutants that they drink only bottled water, worldwide sales of which are forecast to reach \$72 billion by next year. Dr. Corsi's results suggest that they are being exposed to such pollutants anyway simply by breathing at home.

The aim of such research is not, however, to encourage the use of gas masks when unloading the washing. Instead, it is to bring a sense of perspective to the debate about pollution. According to Dr. Corsi, disproportionate effort is wasted campaigning against certain forms of outdoor pollution, when there is as much or more cause for concern indoors, right under people's noses.

Using gas cookers or burning candles, for example, both result in indoor levels of carbon monoxide and particulate matter that are just as high as those to be found outside, amid heavy traffic. Overcrowded classrooms whose ventilation systems were designed for smaller numbers of children frequently contain levels of carbon dioxide that would be regarded as unacceptable on board a submarine. 'New car smell' is the result of high levels of toxic chemicals, not cleanliness. Laser printers, computers, carpets and paints all contribute to the noxious indoor mix.

The implications of indoor pollution for health are unclear. But before worrying about the problems caused by large-scale industry, it makes sense to consider the small-scale pollution at home and welcome international debate about this. Scientists investigating indoor pollution will gather next month in Edinburgh at the Indoor Air conference to discuss the problem. Perhaps unwisely, the meeting is being held indoors.

*1. Questions 1-6. Choose the appropriate letters A-D.*

*1. In the first paragraph, the writer argues that pollution:*

- a) has increased since the eighties;
- b) is at its worst in industrialized countries;
- c) results from poor relations between nations;
- d) is caused by human self-interest;

*2. The Sydney Harbor oil spill was the result of a:*

- a) ship refueling in the harbor;

- b) tanker pumping oil into the sea;
- c) collision between two oil tankers;
- d) deliberate act of sabotage.

3. *In the 3rd paragraph, the writer suggests that*

- a) people should avoid working in cities;
- b) Americans spend too little time outdoors;
- c) hazardous gases are concentrated in industrial suburbs;
- d) there are several ways to avoid city pollution.

4. *The Corsi research team hypothesized that*

- a) toxic chemicals can pass from air to water;
- b) pollution is caused by dishwashers and baths;
- c) city water contains insufficient chlorine;
- d) household appliances are poorly designed.

5. *As a result of their experiments, Dr Corsi's team found that*

- a) dishwashers are very efficient machines;
- b) tap water is as polluted as bottled water;
- c) indoor pollution rivals outdoor pollution;
- d) gas masks are a useful protective device.

6. *Regarding the dangers of pollution, the writer believes that*

- a) there is a need for rational discussion;
- b) indoor pollution is a recent phenomenon;
- c) people should worry most about their work environment;
- d) industrial pollution causes specific diseases.

2) *Questions 7-13. Reading Passage describes a number of cause and effect relationships. Match each Cause (Questions 7-13) in List A with its Effect (A-J) in List B*

List A: CAUSES.

- 7) Industrialized nations use a lot of energy.
- 8) Oil spills into the sea.
- 9) The researchers publish their findings.
- 10) Water is brought to a high temperature.
- 11) People fear pollutants in tap water.
- 12) Air conditioning systems are inadequate.
- 13) Toxic chemicals are abundant in new cars.

List B: EFFECTS.

- a) The focus of pollution moves to the home.
- b) The levels of carbon monoxide rise.
- c) The world's natural resources are unequally shared.
- d) People demand an explanation.
- e) Environmentalists look elsewhere for an explanation.

- f) Chemicals are effectively stripped from the water.
- g) A clean odour is produced.
- h) Sales of bottled water increase.
- i) The levels of carbon dioxide rise.
- j) The chlorine content of drinking water increased.

#### Text 4

### Light Pollution



A) After hours of driving south in the pitch-black darkness of the Nevada desert, a dome of hazy gold suddenly appears on the horizon. Soon, a road sign confirms the obvious: Las Vegas 30 miles. Looking skyward, you notice that the Big Dipper is harder to find than it was an hour ago.

B) Light pollution—the artificial light that illuminates more than its intended target area—has become a problem of increasing concern across the country over the past 15 years. In the suburbs, where over-lit shopping mall parking lots are the norm, only 200 of the Milky Way’s 2,500 stars are visible on a clear night. Even fewer can be seen from large cities. In almost every town, big and small, street lights beam just as much light up and out as they do down, illuminating much more than just the street. Almost 50 percent of the light emanating from street lamps misses its intended target, and billboards, shopping centers, private homes and skyscrapers are similarly over-illuminated.

C) America has become so bright that in a satellite image of the United States at night, the outline of the country is visible from its lights alone. The major cities are all there, in bright clusters: New York, Boston, Miami, Houston, Los Angeles, Seattle, Chicago—and, of course, Las Vegas. Mark Adams, superintendent of the McDonald Observatory in west Texas, says that the very fact that city lights are visible from on high is proof of their wastefulness. “When you’re up in an airplane, all that light you see on the ground from the city is wasted. It’s going up into the night sky. That’s why you can see it.”

D) But don't we need all those lights to ensure our safety? The answer from light engineers, light pollution control advocates and astronomers is an emphatic "no." Elizabeth Alvarez of the International Dark Sky Association (IDA), a nonprofit organization in Tucson, Arizona, says that overly bright security lights can actually force neighbors to close the shutters, which means that if any criminal activity does occur on the street, no one will see it. And the old assumption that bright lights deter crime appears to have been a false one: A new Department of Justice report concludes that there is no documented correlation between the level of lighting and the level of crime in an area. And contrary to popular belief, more crimes occur in broad daylight than at night.

E) For drivers, light can actually create a safety hazard. Glaring lights can temporarily blind drivers, increasing the likelihood of an accident. To help prevent such accidents, some cities and states prohibit the use of lights that impair nighttime vision. For instance, New Hampshire law forbids the use of "any light along a highway so positioned as to blind or dazzle the vision of travelers on the adjacent highway."

F) Badly designed lighting can pose a threat to wildlife as well as people. Newly hatched turtles in Florida move toward beach lights instead of the more muted silver shimmer of the ocean. Migrating birds, confused by lights on skyscrapers, broadcast towers and lighthouses, are injured, sometimes fatally, after colliding with high, lighted structures. And light pollution harms air quality as well: Because most of the country's power plants are still powered by fossil fuels, more light means more air pollution.

G) So what can be done? Tucson, Arizona is taking back the night. The city has one of the best lighting ordinances in the country, and, not coincidentally, the highest concentration of observatories in the world. Kitt Peak National Optical Astronomy Observatory has 24 telescopes aimed skyward around the city's perimeter, and its cadre of astronomers needs a dark sky to work with.

H) For a while, that darkness was threatened. "We were totally losing the night sky," Jim Singleton of Tucson's Lighting Committee told Tulsa, Oklahoma's KOTV last March. Now, after retrofitting inefficient mercury lighting with low-sodium lights that block light from "trespassing" into unwanted areas like bedroom windows, and by doing away with some unnecessary lights altogether, the city is softly glowing rather than brightly beaming. The same thing is happening in a handful of other states, including Texas, which just passed a light pollution bill last summer. "Astronomers can get what they need at the same time that citizens get what they need: safety, security and good visibility at night," says McDonald Observatory's Mark Adams, who provided testimony at the hearings for the bill.

I) And in the long run, everyone benefits from reduced energy costs. Wasted energy from inefficient lighting costs us between \$1 and \$2 billion a year, according to IDA. The city of San Diego, which installed new, high-efficiency street lights after passing a light pollution law in 1985, now saves about \$3 million a year in energy costs.

J) Legislation isn't the only answer to light pollution problems. Brian Greer, Central Ohio representative for the Ohio Light Pollution Advisory Council, says that education is just as important, if not more so. "There are some special situations where regulation is the only fix," he says. "But the vast majority of bad lighting is simply the result of not knowing any better." Simple actions like replacing old bulbs and fixtures with more efficient and better-designed ones can make a big difference in preserving the night sky.

\*The Big Dipper: a group of seven bright stars visible in the Northern Hemisphere.

1. *Question 1-5. The first six paragraphs of Reading Passage 1 are lettered A-F. Choose the most suitable headings for paragraphs A-F from the list of headings below. NB There are more headings than paragraphs, so you will not use them all.*

### List of Headings

- I - Why lights are needed
- II - Lighting discourages law breakers
- III - The environmental dangers
- IV - People at risk from bright lights
- V - Illuminating space
- VI - A problem lights do not solve
- VII - Seen from above
- VIII - More light than is necessary
- IX - Approaching the city

| Example        | Answer                    |
|----------------|---------------------------|
| Paragraph A    | ix (Approaching the city) |
| 1) Paragraph A | _____                     |
| 2) Paragraph C | _____                     |
| 3) Paragraph D | _____                     |
| 4) Paragraph E | _____                     |
| 5) Paragraph F | _____                     |

2. *Question 6-9. Complete each of the following statements with words taken from the passage. Write ONE or TWO WORDS for each answer.*

6) According to a recent study, well-lit streets do not \_\_\_\_\_ or make neighborhoods safer to live in.

7) Inefficient lighting increases \_\_\_\_\_ because most electricity is produced from coal, gas or oil.

8) Efficient lights \_\_\_\_\_ from going into areas where it is not needed.

9) In dealing with light pollution \_\_\_\_ is at least as important as passing new laws.

3. Questions 10 – 13. Do the following statements agree with the information given in Reading Passage?

- |           |                                                  |
|-----------|--------------------------------------------------|
| True      | If the statement agrees with the information     |
| False     | If the statement contradict with the information |
| Not given | If there is no information on this               |

10) One group of scientists finds their observations are made more difficult by bright lights.

11) It is expensive to reduce light pollution.

12) Many countries are now making light pollution illegal.

13) Old types of light often cause more pollution than more modern ones.

### Listening.

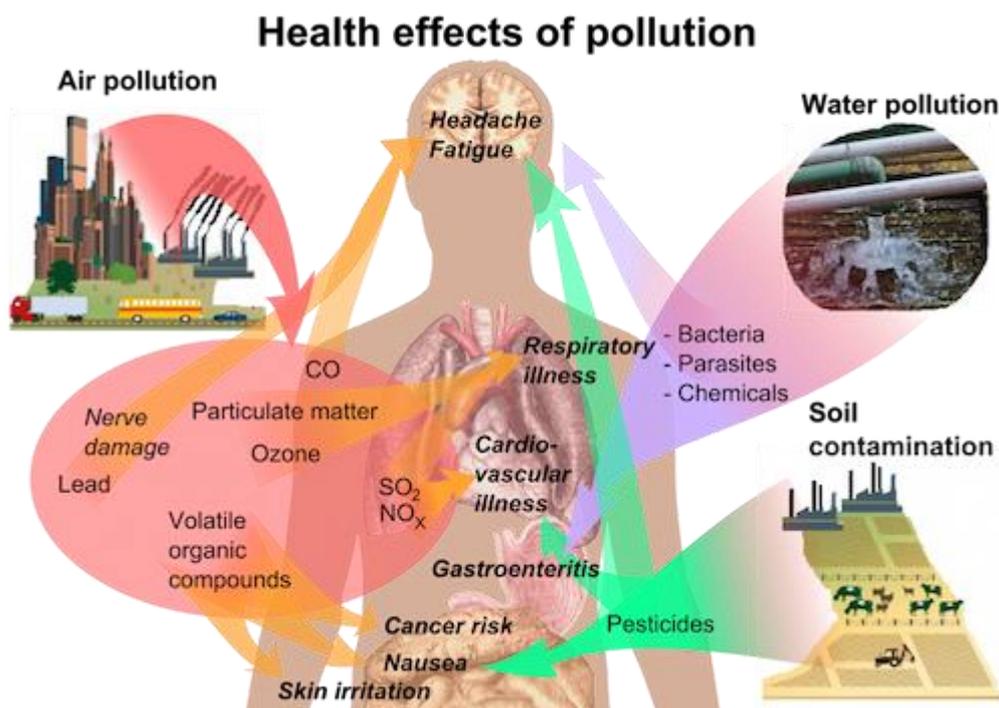
[https://www.examenglish.com/B1/b1\\_listening\\_environment.htm](https://www.examenglish.com/B1/b1_listening_environment.htm)

[https://www.esolcourses.com/content/lifeintheuk/london/air\\_pollution/london-smog-lesson-activities.html](https://www.esolcourses.com/content/lifeintheuk/london/air_pollution/london-smog-lesson-activities.html)

<https://www.youtube.com/watch?v=e6rglsLy1Ys>

### Speaking.

Look at the picture. Discuss the health effect pollution.

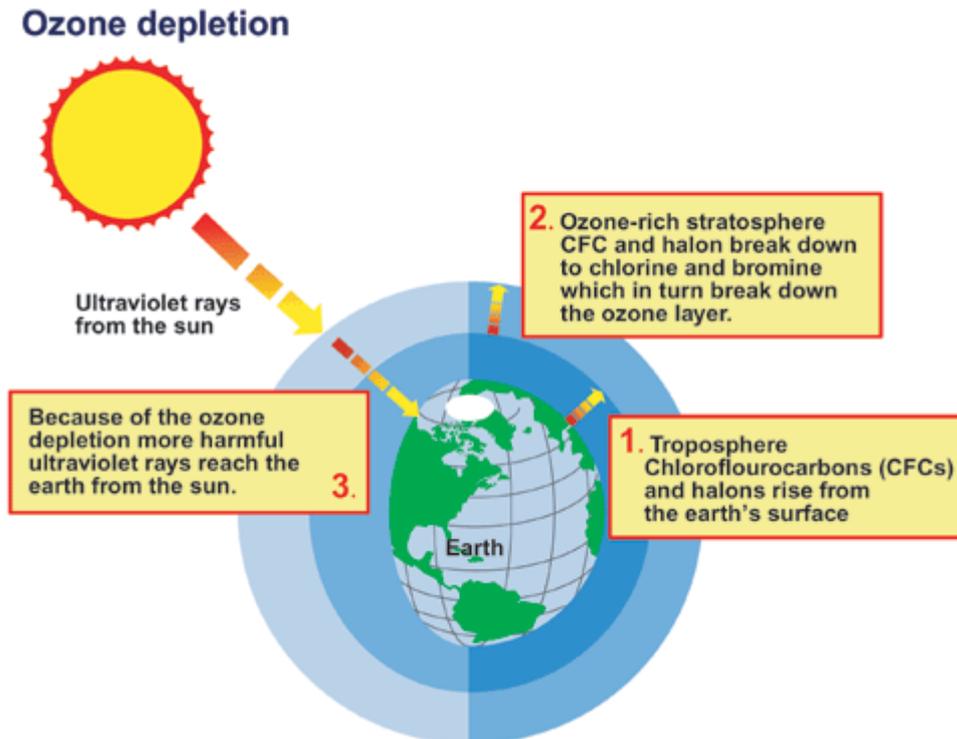


## Unit 5

### Holes in ozone layer

#### Text 1

#### The ozone hole



A) The Ozone Hole Ozone is a bluish gas that is harmful to breathe. Nearly 90% of the Earth's ozone is in the stratosphere and is referred to as the ozone layer. Ozone absorbs a band of ultraviolet radiation called UVB that is particularly harmful to living organisms. Stratospheric ozone is constantly being created and destroyed through natural cycles. Various ozone depleting substances however, accelerate the destruction processes, resulting in lower than normal ozone levels. Reductions in ozone levels will lead to higher levels of UVB reaching the Earth's surface. The sun's output of UVB does not change; rather, less ozone means less protection, and hence more UVB reaches the Earth. Studies have shown that in the Antarctic, the amount of UVB measured at the surface can double during the annual ozone hole. Laboratory and epidemiological studies demonstrate that UVB causes non melanoma skin cancer and plays a major role in malignant melanoma development. In addition, UVB has been linked to cataracts.

B) Dramatic loss of ozone in the lower stratosphere over Antarctica was first noticed in the 1970s by a research group from the British Antarctic Survey (BAS) who were monitoring the atmosphere above Antarctica from a research station. Folklore has it that when the first measurements were taken in 1975, the drop in ozone levels in the stratosphere was so dramatic that at first the scientists thought their instruments were faulty. Replacement instruments were built and flown out and it wasn't until they confirmed the earlier measurements, several months later,

that the ozone depletion observed was accepted as genuine. Another story goes that the BAS satellite data didn't show the dramatic loss of ozone because the software processing the raw ozone data from the satellite was programmed to treat very low values of ozone as bad readings. Later analysis of the raw data when the results from the British Antarctic Survey team were published confirmed their results and showed that the loss was rapid and large-scale; over most of the Antarctica continent.

C) Ozone occurs naturally in the atmosphere. The earth's atmosphere is composed of several layers. We live in the Troposphere, ground level up to about 10km high, where most of the weather occurs such as rain, snow and clouds. Above that is the Stratosphere, an important region in which effects such as the Ozone Hole and Global Warming originate. The layer next to space is the Exosphere and then going inwards there are the Thermosphere and the Mesosphere. Supersonic passenger jets fly just above the troposphere whereas subsonic commercial airliners are usually well in the troposphere. The narrow region between these two parts of the atmosphere is called the Tropopause. Ozone forms a layer in the stratosphere, thinnest in the tropics and denser towards the poles. The amount of ozone above a point on the earth's surface is measured in Dobson units (DU) – typically ~260 DU near the tropics and higher elsewhere, though there are large seasonal fluctuations. It is created when ultraviolet radiation in the form of sunlight strikes the stratosphere, splitting oxygen molecules to atomic oxygen. The atomic oxygen quickly combines with further oxygen molecules to form ozone.

D) The Ozone Hole often gets confused in the popular press and by the general public with the problem of global warming. Whilst there is a connection because ozone contributes to the greenhouse effect, the Ozone Hole is a separate issue. Over Antarctica (and recently over the Arctic), stratospheric ozone has been depleted over the last 15 years at certain times of the year. This is mainly due to the release of man-made chemicals containing chlorine such as CFCs (ChloroFluoroCarbons), but also compounds containing bromine, other related halogen compounds and also nitrogen oxides. CFC's are a common industrial product, used in refrigeration systems, air conditioners, aerosols, solvents and in the production of some types of packaging. Nitrogen oxides are a by-product of combustion processes, for example aircraft emissions.

E) The ozone depletion process begins when CFCs and other ozone depleting substances are emitted into the atmosphere where winds efficiently mix and evenly distribute the gases. CFCs are extremely stable, and they do not dissolve in rain. After a period of several years natural gases in the stratosphere combine with CFCs and this releases chlorine atoms, halons and methyl bromide. These in turn all release bromine atoms and it is these atoms that actually destroy ozone. It is estimated that one chlorine atom can destroy over 100,000 ozone molecules before it is removed from the stratosphere.

F) The first global agreement to restrict CFCs came with the signing of the Montreal Protocol in 1987 ultimately aiming to reduce them by half by the year

2000. Two revisions of this agreement have been made in the light of advances in scientific understanding, the latest being in 1992. Agreement has been reached on the control of industrial production of many halocarbons until the year 2030. The main CFCs will not be produced by any of the signatories after the end of 1995, except for a limited amount for essential uses, such as for medical sprays. The countries of the European Community have adopted even stricter measures. Recognizing their responsibility to the global environment they have agreed to halt production of the main CFCs from the beginning of 1995. It was anticipated that these limitations would lead to a recovery of the ozone layer within 50 years of 2000. The World Meteorological Organization estimated 2045 but recent investigations suggest the problem is perhaps on a much larger scale than anticipated.

*1. Questions 1 – 6. The reading passage on The Ozone Hole has 6 paragraphs (A – F). From the list of headings below (a – i) choose the most suitable headings for paragraphs A – F.*

- a) The Destruction Process.
- b) How Is Ozone Formed?
- c) How Technology Can Help.
- d) Artificial Emissions.
- e) What Is Being Done?
- f) The Function of the Ozone Layer.
- g) Empirical Analysis.
- h) Initial Identification.
- i) Hospitalization.

- 1) Paragraph A.
- 2) Paragraph B.
- 3) Paragraph C.
- 4) Paragraph D.
- 5) Paragraph E.
- 6) Paragraph F.

*2. Questions 9 – 14. Complete the following statements (questions 9 – 14) with the best ending from the box below (A – H) according to the information in the reading passage The Ozone Hole. There are more sentence endings (A – H) than questions so you will not need to use them all.*

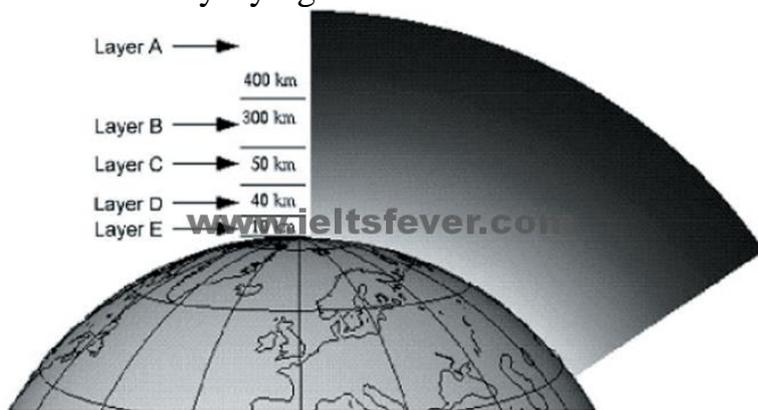
- 9) International agreements will eventually lead to...
- 10) An apocryphal BAS story cites that equipment was changed to measure...
- 11) It is a common mistake to associate the Ozone Hole problem with...
- 12) The thickness of the Ozone layer varies with...
- 13) The Ozone layer is destroyed by a by-product of CFCs reacting with...
- 14) Common household appliances contribute to...

- a) the location of the layer relative to the earth.
- b) the discharge of synthetic chemicals into the atmosphere.
- c) the satellite orbiting the earth.
- d) the normal components of the earth's atmosphere.
- e) the apparently anomalous readings taken earlier.
- f) the issue of the heating up of the earth's atmosphere.
- g) recent investigations into the strength of Dobson Units.
- h) the cessation of the release of most CFC gases into the atmosphere.

3. Questions 15 – 16. Answer questions 15 and 16 below with reference to the diagram of the earth and its layers of atmosphere at the bottom of the page.

15) In which atmosphere layer would you find the Ozone layer and hole?

16) In which atmosphere layer would you find a conventional passenger airliner usually flying?



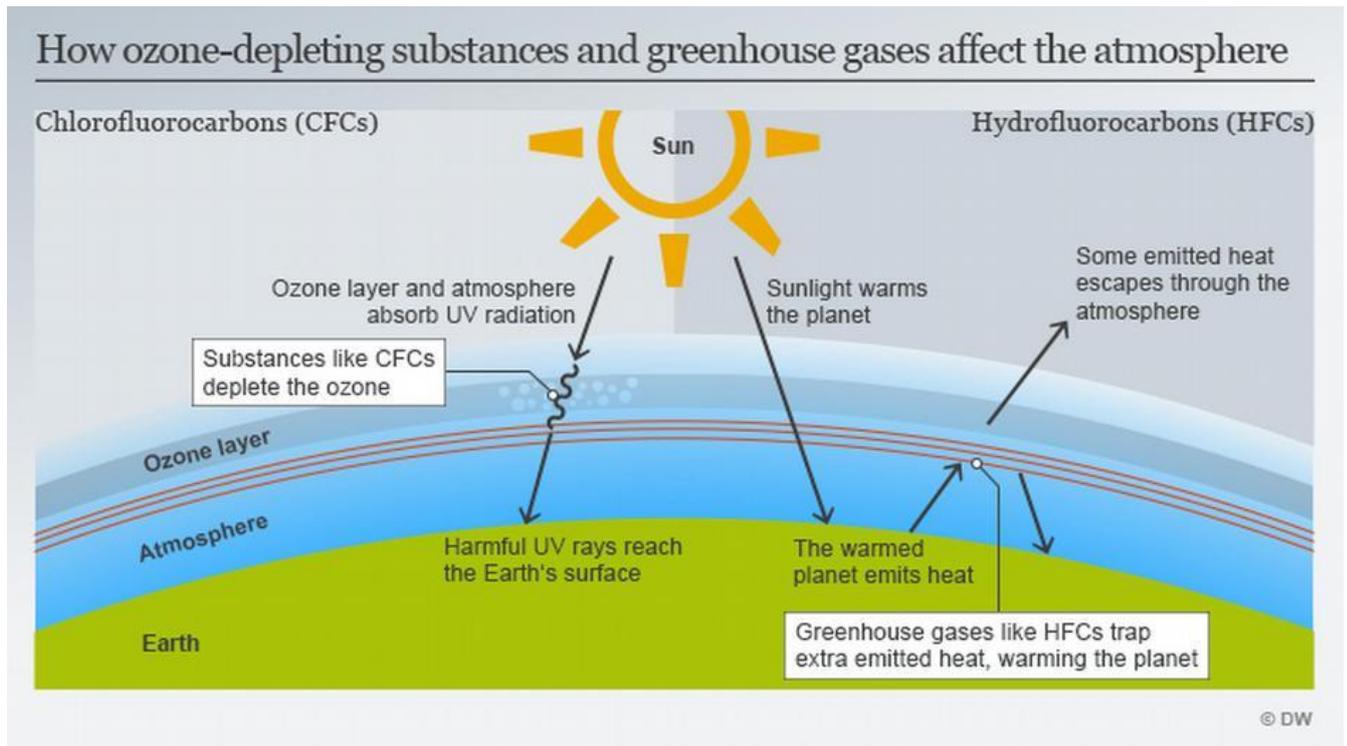
## Text 2

### Ozone depletion

There is a solid international *consensus* about the causes and effects of ozone depletion. About 300 scientists from all corners of the world drafted and reviewed the World Meteorological Organization (WMO) & United Nations Environment Program (UNEP) Scientific Assessment of Ozone Depletion: 1998. The assessment is that the situation is serious but not irreversible.

What exactly is the ozone layer and why is it important? Ozone is a form of oxygen, with each ozone molecule made up of three oxygen atoms. Unlike oxygen, ozone is poisonous which would be a problem if concentrated at ground level but is highly beneficial to life when collected in the stratosphere because *it* blocks out the sun's ultraviolet rays. A diminished ozone layer allows more UV radiation to reach the earth's surface, a serious effect because it can damage DNA, which means it is potentially harmful to most living things, including plants. The human body cannot detect ultraviolet radiation directly which means that humans are unaware of the damage that is done to them on sunny days. This damage can include skin cancer,

cataracts and weakened immune systems in humans and reduced crop yields and disruptions in the marine food chain.



Even small percentage reductions in the amount of ozone in the upper atmosphere cause a measurable increase in UV radiation that reaches the earth's surface. This reduction has been directly traced to human activity because we now realize that certain manufactured substances can destroy stratospheric ozone much faster than it is formed. Specifically, the release of chlorofluorocarbons (CFCs) and other ozone-depleting substances, which are widely used as refrigerants, insulating foams and solvents, are the culprits. When CFCs float up into the stratosphere, they are broken apart by the UV radiation, releasing chlorine atoms that react with ozone, starting chemical cycles of ozone destruction and depletion.

The Montreal Protocol of 1987 attempts to limit the production and use of ozone-depleting substances. Some success has already been recorded with a slowing down in the rate of ozone loss and a leveling off of the concentration of CFCs in the atmosphere. Scientists remain hopeful that, if countries keep to the targets set by the international community, stratospheric ozone will return to normal levels by about 2050.

1. Which title best expresses the ideas in the text?

- a) Ozone and its effects on humans.
- b) The scientific reasons for ozone depletion.
- c) Ozone depletion: causes and solutions.
- d) International action against ozone depletion.

2. Chlorine (final sentence, paragraph 3) is mentioned because it

- a) exists in the stratosphere;
- b) fights UV radiation;
- c) attacks ozone;
- d) reduces ozone loss.

3. Which one of the following statements is not true?

- a) CFCs have been eliminated from the atmosphere.
- b) Plant and human life are damaged by UV radiation.
- c) Ozone depletion can be stopped.
- d) The ozone layer is poisonous.

4. The word "it" in sentence 3 of paragraph 2 (after "'stratosphere because") refers to

- a) Ozone.
- b) Oxygen.
- c) Stratosphere.
- d) Ground level.

5. Ozone depletion

- a) has always occurred;
- b) is a consequence of radiation changes;
- c) is a man-made problem;
- d) decreases UV radiation.

6. The word "consensus" in the first line of the text could best be replaced by

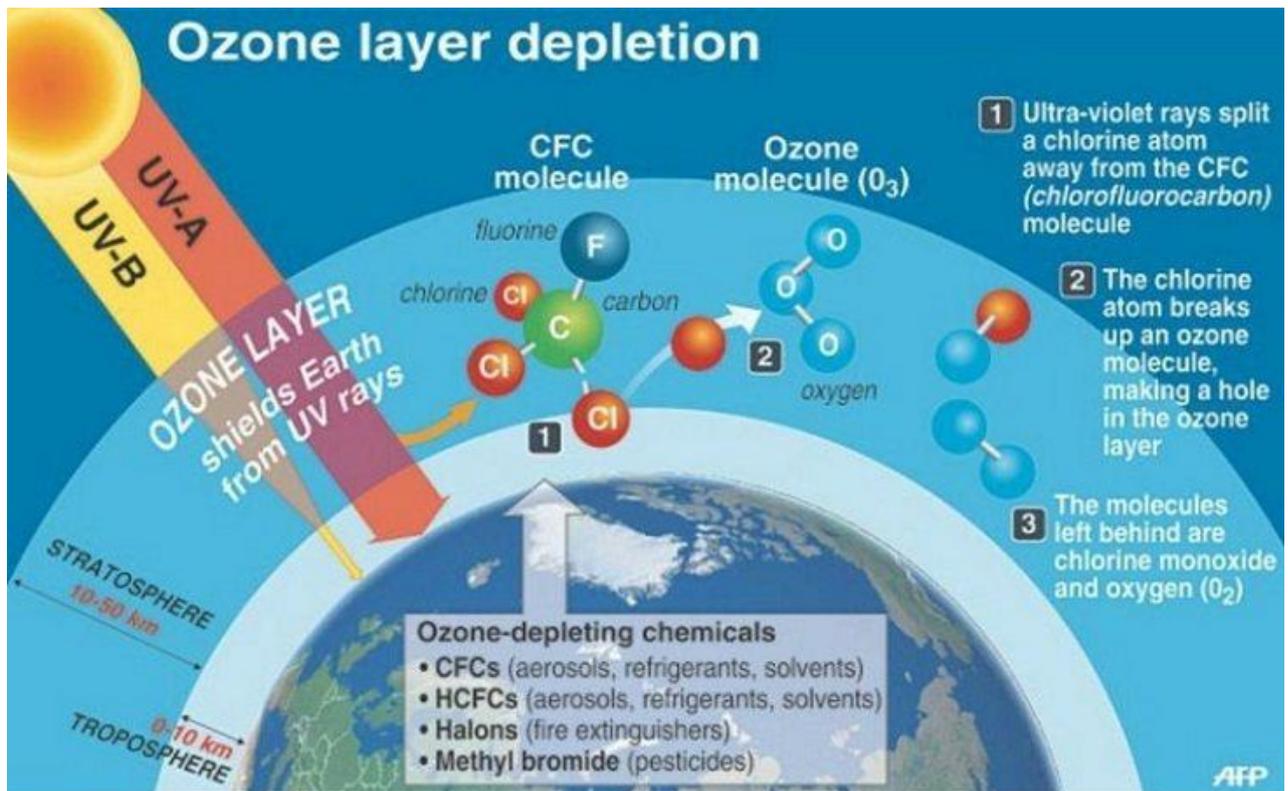
- a) Concern.
- b) Conference.
- c) Agreement.
- d) Sympathy.

### **Text 3**

#### **The Montreal Protocol**

The *ozone layer depletion* is harmful to the environment. The *ozone layer* or *ozone shield* is a region of Earth's stratosphere that absorbs most of the Sun's ultraviolet (UV) radiation. It was discovered in 1913 by the French physicists Charles Fabry and Henri Buisson. The ozone layer contains high concentrations of ozone in relation to other parts of the atmosphere.

A depletion of the ozone layer has been noticed since the late 1970s. In atmospheric regions over Antarctica, the ozone layer has become significantly thin, especially in spring season causing the formation of what is called 'ozone hole'. The main cause of ozone depletion and the ozone hole is man-made chemicals such as the chlorofluorocarbon (CFCs). As a consequence of the deterioration of the ozone layer, large amounts of ultraviolet B rays reach the Earth, which can cause skin cancer and cataracts in humans and harm animals as well.



The harmful consequences of ozone deterioration paved the way to the adoption of the Montreal Protocol in 1987. This protocol bans the production of CFCs, halons, and other ozone-depleting chemicals. The ban came into effect in 1989 and since then it has had positive effects on the environment. Ozone levels stabilized by the mid-1990s and began to recover in the 2000s. Recovery is projected to continue over the next century, and the ozone hole is expected to reach pre-1980 levels by around 2075. The Montreal Protocol is considered the most successful international environmental agreement to date.

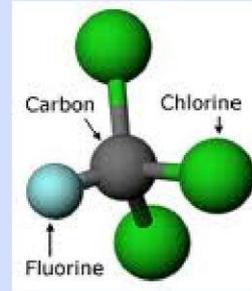
1. *The ozone layer was discovered in the 1970s.*
  - a) True.
  - b) False.
2. *The deterioration of the ozone layer started in the 21st century.*
  - a) True.
  - b) False.
3. *The harmful chemicals that caused the ozone layer depletion are not allowed to be produced anymore.*
  - a) True.
  - b) False.
4. *The ozone layer is still deteriorating.*
  - a) True.
  - b) False.

## Text 4

### Chlorofluorocarbons (CFCs)

## CFCs

- **Chlorofluorocarbons (CFCs)** are chemical compounds that destroy the ozone layer.
- CFCs are found in some:
  - Refrigerators
  - Air conditioners
  - Aerosol sprays
  - Styrofoam packaging



The following question is based on material written in 1996: The Montreal Protocol on Substances that Deplete the Ozone Layer, signed in 1987 by more than 150 nations, has attained its short-term goals: it has decreased the rate of increase in amounts of most ozone-depleting chemicals reaching the atmosphere and has even reduced the atmospheric levels of some of them. The projection that the ozone layer will substantially recover from ozone depletion by 2050 is based on the assumption that the protocol's regulations will be strictly followed. Yet there is considerable evidence of violations, particularly in the form of the release of ozone-depleting chlorofluorocarbons (CFCs), which are commonly used in the refrigeration, heating, and air-conditioning industries. These violations reflect industry attitudes; for example, in the United States, 48% of respondents in a recent survey of subscribers to Air Conditioning, Heating, and Refrigeration News, an industry trade journal, said that they did not believe that CFCs damage the ozone layer. Moreover, some in the industry apparently do not want to pay for CFC substitutes, which can run five times the cost of CFCs. Consequently, a black market in imported illicit CFCs has grown. Estimates of the contraband CFC trade range from 10,000 to 22,000 tons a year, with most of the CFCs originating in India and China, whose agreements under the Protocol still allow them to produce CFCs. In fact, the United States Customs Service reports that CFC-12 is a contraband problem second only to illicit drugs.

1. *The passage suggests which of the following about the illicit trade in CFCs?*

a) It would cease if manufacturers in India and China stopped producing CFCs.

b) Most people who participate in such trade do not believe that CFCs deplete the ozone layer.

c) It will probably surpass illicit drugs as the largest contraband problem faced by the United States Customs Service.

d) It is fostered by people who do not want to pay the price of CFC substitutes.

e) It has grown primarily because of the expansion of the refrigeration, heating, and air-conditioning industries in foreign countries.

2. *According to the passage, which of the following best describes most ozone-depleting chemicals in 1996 as compared to those in 1987?*

a) The levels of such chemicals in the atmosphere had decreased.

b) The number of such chemicals that reached the atmosphere had declined.

c) The amounts of such chemicals released had increased but the amounts that reached the atmosphere had decreased.

d) The rate of increase in amounts of such chemicals reaching the atmosphere had decreased.

e) The rate at which such chemicals were being reduced in the atmosphere had slowed.

### **Listening.**

<https://www.ieltswithmrduc.com/single-post/2017/12/15/IELTS-Listening-Revision-%E2%80%93Science-and-Innovation>

<http://ieltsliz.com/world-environmental-problems-vocabulary/>

<https://lengish.com/tests/listening-38.html>

## **Unit 6**

### **Rubbish. Waste**

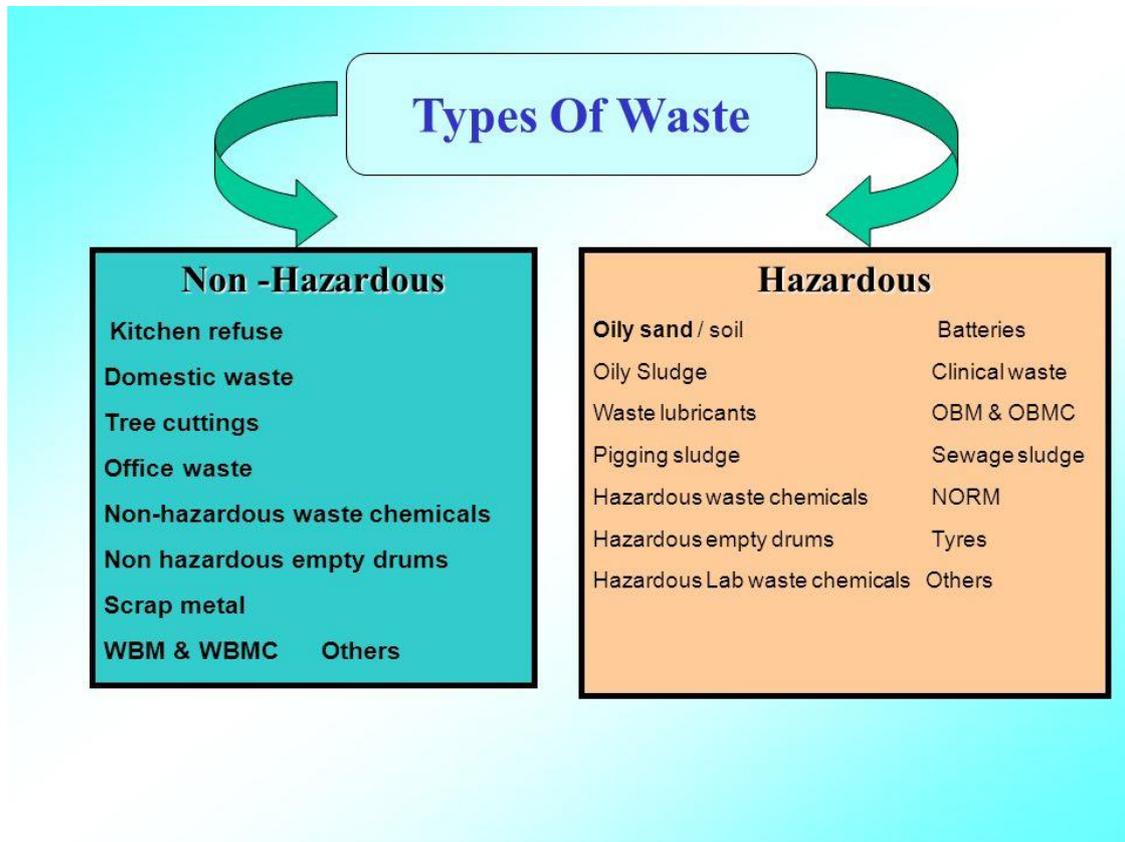
#### **Text 1**

#### **What a waste!**

Every day, all over the world, unwanted waste is disposed of from both domestic and commercial sources, usually with insufficient attention paid to the resulting problems. The increase in excess refuse and how to dispense with it has become a major headache for the government and the environmental agencies.

This has certainly been the case in Britain where there has been a steady rise in the amount of rubbish generated in recent years. In industry, the mining, agriculture and construction sectors are the biggest culprits, being amongst the greatest producers of waste. Also, household waste has grown at a rate of 3% a year as a consequence of society becoming more affluent and thus consuming more

goods, resulting in more rubbish to discard. As this waste is economically and environmentally costly to deal with, local authorities have been required to ensure that the arrangements made to dispose of the surplus detritus are efficient and practicable, considering social as well as economic implications.



For many years, the preferred option for refuse disposal in Britain has been the landfill. In fact, the UK, more than any other European country, makes use of landfills to get rid of its biodegradable waste. However, problems have arisen with this method and alternative solutions have had to be researched.

One of the biggest drawbacks to landfills is the cost. In the past this was not the case as land was plentiful and cheap with abandoned quarries and mines often being utilized. But by 2015, since space for approved and licensed landfills will have run out, viable alternatives to waste disposal have to be found. Another disadvantage is the environmental impact made by the acids and hazardous chemicals that are leaked from the landfills. Older sites depended on these substances being diluted naturally by rain but this often did not occur and surrounding agricultural land was affected and livestock poisoned. Nowadays, more modern landfills use liners within the pits to contain any dangerous material and the liquid is then collected, treated and discharged within the site itself. But perhaps the most apparent annoyance for the general public living in the immediate vicinity of the landfill is the nuisance that results from the traffic, the noise, the dust and the unpleasant odours emanating from the site. Although no risks to human health have been verified, symptoms such as headaches, drowsiness and exhaustion have been

reported by people living close to landfills. These may have been caused by toxic emissions from the site but they may be connected to the impact that living next to the sites can have on stress and anxiety.

In order to reduce the amount of waste being sent to the landfill, a special tax was introduced in 1996, to discourage this practice. The charges range from two to eleven pounds per ton depending on the type of rubbish being discarded and due to this tax the amount of waste from the construction industry has been markedly reduced. Other targets have been set to reduce biodegradable waste deposited in these sites by 2006 but it is thought that the greatest impact could be made through the introduction of more intensive recycling, which could be funded from the proceeds of the landfill tax.

In Europe, Britain is bottom of the recycling table with the lowest rate of 8% compared to the Netherlands where they recycle 72% of their detritus. According to government research, only 7% of plastic was salvaged, as was only 22% of the six billion glass containers manufactured annually in Britain. On the other hand, the same sources found that 90% of car batteries and 66% of lead is recycled. This proportion is high because of the economic value of the material and so reprocessing is an opportunity to gain an income from an environmentally friendly undertaking. Also, of the thirteen billion steel cans produced yearly, about a quarter come from recycled metal. These goods only consume 25% of the energy needed to make the same products from raw materials.

Biodegradable wastes can be made into organic compost to use as fertilizer for the land. At present less than half the local authorities have facilities for this and about a fifth of municipal waste is being treated but in some areas, schemes are being set up to collect waste from both domestic properties and supermarkets to help effect this procedure.

Yet even now in the 21st century, less progressive authorities are still constructing and employing incinerators to dispose of waste despite the subsequent health hazards. They also have to confront opposition from the public over a policy which has proved to be the most unpopular technology since the introduction of nuclear power.

So, what can be done to encourage more recycling? Probably what should be the government's priority is the reduction in the number of landfills in regular use. Even materials that are biodegradable such as paper cannot easily be broken down as the landfill pits are constructed to keep air out and moisture in, thus slowing down the process to degrade this matter. Therefore, more reprocessing plants for refuse must be constructed to replace the outmoded landfills. Also, companies should be encouraged to take a more responsible approach to the packaging of their products, only using the minimum and environmentally friendly recycled materials. Then, the public must be convinced of the benefits of recycling and be made aware of the ecological consequences of not recycling. In Britain, more intensive reprocessing would lower the production of gases harmful to the ozone layer by 12.8 million tons of carbon a year, the equivalent of taking nearly five million cars

off the road. Also, a strong incentive for the public to support recycling is the prospect of higher employment. In Germany, it has been estimated that 150,000 people are employed in the recycling business, a number greater than those employed in the steel industry. It is believed that up to 50,000 jobs could be created in Britain if recycling was adopted.

What will happen in the future regarding the disposal of waste matter very much depends on the attitude and party policies of the particular government in power. Yet, if reforms to the methods of waste disposal are not made, serious environmental problems will arise in the immediate future, the consequences of which are too dire to contemplate.

*1. Questions 1-4. Choose ONE phrase from the list of phrases A - I below to complete each of the following sentences.*

List of Phrases:

- a) there is a lot of mining in Britain;
- b) dangerous materials are collected in landfills;
- c) as the population becomes wealthier, their capacity to consume more increases;
- d) there is relatively little recycling of degradable matter in Britain;
- e) landfills poison animals;
- f) a lot of waste from food shops is made into fertilizers;
- g) problems for people residing nearby;
- h) using incinerators is the most popular method of rubbish disposal;
- i) the most common means of waste disposal is burying refuse;
- 1) More household waste is produced because...
- 2) In Britain...
- 3) Landfills create...
- 4) Unlike Europe...

*2. Questions 5 and 6. Choose the best answer A, B, C or D*

- 5) Landfills are not approved of because.
  - a) they use agricultural land.
  - b) they have always been expensive to run
  - c) they need to have a licence.
  - d) they produce dangerous emissions.
- 6) A tax was imposed in order
  - a) to encourage recycling.
  - b) to dissuade people from using landfills.
  - c) to punish the building industry.
  - d) to gather money for the government

*Questions 7-14. Complete the summary below.*

Solutions to the problem of how to dispose of excess rubbish must be found. With the dramatic increase in both \_\_\_\_ (7) and industrial rubbish, the \_\_\_\_ (8) must devise new policies to deal with the matter. The well-established \_\_\_\_ (9) are now considered \_\_\_\_ (10) so it is preferable to send the refuse to \_\_\_\_ (11) works in order to \_\_\_\_ (12) the waste products which could then be used to manufacture \_\_\_\_ (13) goods. Also the general public must be better informed of the worrying environmental \_\_\_\_ (14) the planet faces if this matter is not addressed urgently

## **Text 2**

### **The Garbage problem**

Garbage is a big problem all over the world. People buy and use a lot of things nowadays. After a while, they throw them away in the garbage bin. All the garbage is later thrown away or dumped outside the city. These places are called landfill sites. In many cities, landfill sites are now full.

About one-third of all the garbage is made of paper. Another third of the garbage is a mix of glass, metal, plastic, and wood. The final third comes from food scraps. These are remains of food that are not eating any more. Food scraps are not a big garbage problem for the environment. Our natural world can get rid of food scraps. Insects and bacteria eat the food scraps and make them go away.

But this does not happen with other materials. Plastic is very toxic to the environment. It poisons the earth and the water. We use plastic for many things, such as combs or pens. Also, when we buy something from the supermarket, we get a plastic bag. As soon as we get home, we throw the bag away. Plastic is also used to make Styrofoam. All take-out coffee cups and fast-food boxes are made of Styrofoam. When we buy coffee and drink it on the street, we throw that cup away too.

Other garbage we throw away is metal. The cans for soft drinks or beer are made of aluminum. Aluminum is toxic too. The paper and wood we throw away are not toxic. But we have to cut down many trees every year to make paper and wood. Our environment suffers when there are no forests around. The air is less fresh, and the earth dries up. With no water in the earth, plants cannot grow.

### **Solutions to the garbage problem**

We have to manage our waste and garbage better. If we throw away so many things, soon we will have no place to dump them.

The best thing to do is to reduce the amount of garbage. If we use less, we throw away less. For instance, we can buy food in big boxes and packages. Then we

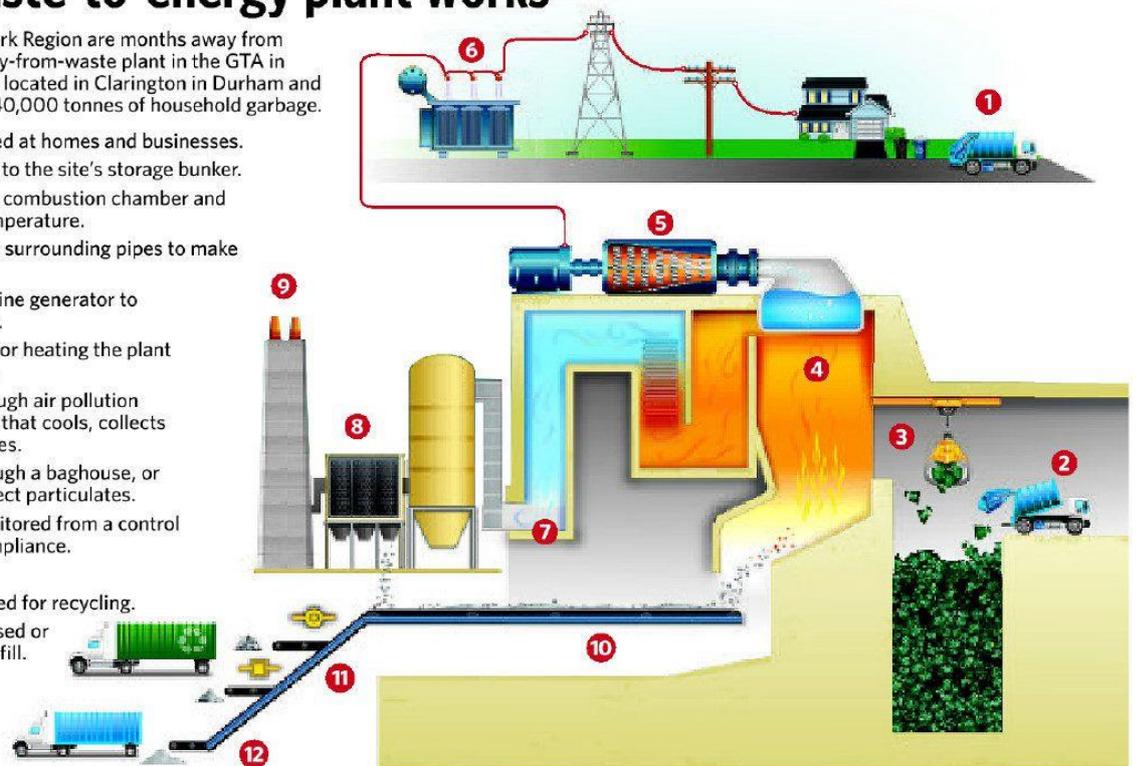
throw away only one box i every month or so. Otherwise, we throw away many small boxes or cans every day.

Similarly, we can reuse a lot of packaging. For example, we do not have to buy take-out coffee in Styrofoam cups. We can bring our own cup from home and fill it with fresh coffee. We also do not have to take the plastic bags from the supermarket. We can bring our own cloth bag from home instead. When we pack lunch, it is better to use a lunch box than a paper bag. Instead of paper plates, we can use real plates. We can clean up with a dishtowel, not a paper towel. We can use a compost bin for food scraps. In this way, the food gets back into the earth. It does not get mixed up with the regular garbage.

## How a waste-to-energy plant works

Durham Region and York Region are months away from opening the first energy-from-waste plant in the GTA in decades. The facility is located in Clarington in Durham and will burn as much as 140,000 tonnes of household garbage.

1. Garbage is collected at homes and businesses.
2. Waste is delivered to the site's storage bunker.
3. Waste is fed into a combustion chamber and burned at high-temperature.
4. Heat boils water in surrounding pipes to make steam.
5. Steam turns a turbine generator to produce electricity.
6. Electricity is used for heating the plant or sent to the grid.
7. Gases are fed through air pollution control equipment that cools, collects and cleans the gases.
8. Gas is moved through a baghouse, or fabric filter, to collect particulates.
9. Emissions are monitored from a control area to ensure compliance.
10. Ash is collected.
11. Metals are extracted for recycling.
12. Leftover ash is reused or disposed of in landfill.



SOURCE: Covanta Energy

TORONTO STAR GRAPHIC

Finally, all paper, glass and metal we do use, we can recycle. In many countries, there are now recycling programs. In Germany, for example, people separate all glass bottles by color. Then they put the bottles into special bins that are on the street. The city collects the glass, cleans it, and reuses it. As well, in most countries, people recycle newspapers and cardboard. It is easy and efficient.

1. What is the topic word of the first passage?
- a) Throw away.
  - b) Garbage.
  - c) Plastic.
  - d) Environment.

2. *What is the main idea of the second passage?*
- a) People must deal with garbage better.
  - b) People should reuse things.
  - c) People should recycle more.
  - d) People should reduce their waste.
3. *Why does the author say that garbage is a big problem?*
- a) Because people buy too many things.
  - b) Because people throw away everything they buy.
  - c) Because not all cities have landfill sites.
  - d) Because landfill sites get fewer and fewer.
4. *What do people throw away?*
- a) Paper and wood.
  - b) Plastic, glass and metal.
  - c) Food scraps.
  - d) All of the above.
5. *Why does the author mention Germany at the end of the reading passage?*
- a) To suggest that recycling is the best solution to the garbage problem.
  - b) To offer additional advice about how to handle waste.
  - c) To criticize countries that do not have a recycling program.
  - d) To demonstrate that recycling works.
6. *Why should people not throw away Styrofoam cups?*
- a) Because they are toxic to the environment.
  - b) Because they can reuse them again at home.
  - c) Because they can buy take-out coffee in them.
  - d) Because they can fill them again with fresh coffee.

*Questions 7-8. What advice does the author give about reusing waste?  
Choose TWO letters, a - d.*

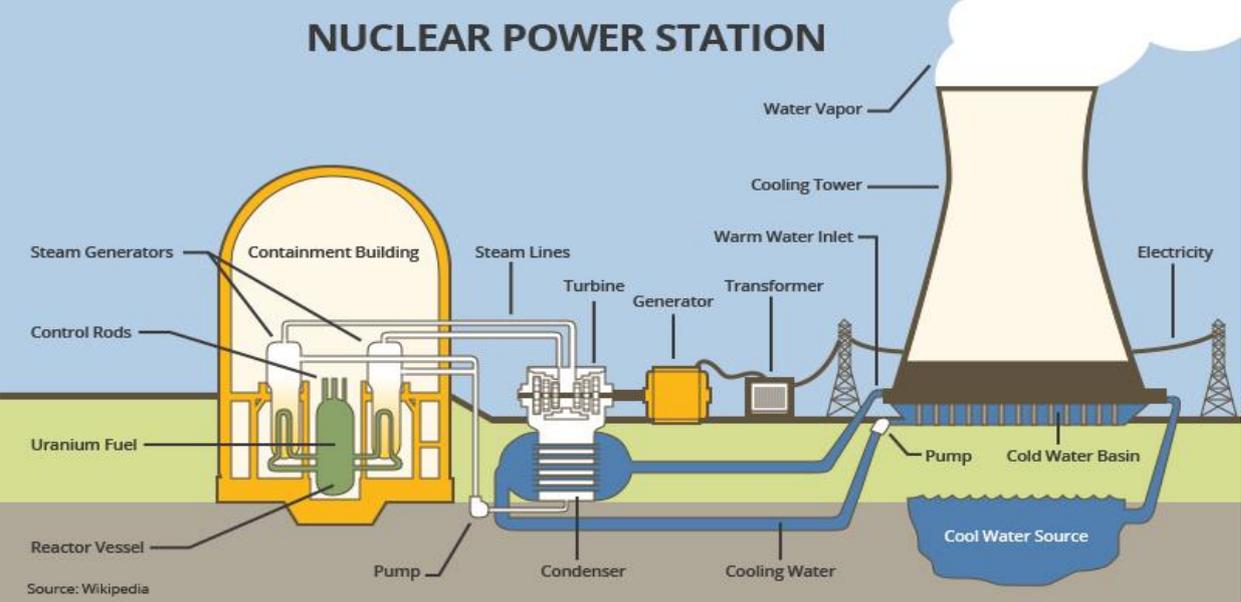
- a) We should drink take-out coffee.
- b) We should use our own bags, cups and plates.
- c) We should throw away food in the compost bin.
- d) We should clean glasses ourselves and recycle them.

### **Text 3**

#### **Radioactive waste**

The world's nuclear plants have accumulated vast stocks of highly radioactive waste. Worldwide, high-level waste is currently stored above ground, and no government has a clear policy on its eventual disposal. While most experts believe that burying the waste is the safest bet in the long term, the problem is finding sites that everyone can agree are geologically stable. Decaying radioactive isotopes release heat. As a result, high-level waste must be constantly cooled; otherwise, it becomes dangerously hot. This is why many experts want to store waste above

ground until it has decayed and is cool enough to be stored safely in sealed repositories several hundreds of meters below ground. According to one recent theory, however, waste should be lowered down boreholes drilled to 4 kilometers. The trick is to exploit heat generated by the waste to fuse the surrounding rock and contain any leaking radioactivity.



1. It is clear from the passage that the safe disposal of radioactive waste \_\_\_\_\_.

- a) has been satisfactorily dealt with by scientists in conjunction with governments;
- b) is a problem that each government must decide on for its own country;
- c) remains a global problem of great magnitude;
- d) is a problem that has not attracted enough attention;
- e) will in all likelihood soon be resolved, and a clear policy agreed on by concerned governments.

2. As it is pointed out in the passage, many experts are of the opinion that radioactive waste \_\_\_\_\_.

- a) should never be stored underground as it cannot then be monitored;
- b) should not be stored underground while the radioactive isotopes continue to let off substantial amounts of heat;
- c) does not require to be cooled when stored above ground;
- d) cannot be safely disposed of anywhere and the problem of what to do with it intensifies as the amount increases;
- e) can be safely left to cool down underground in sealed repositories.

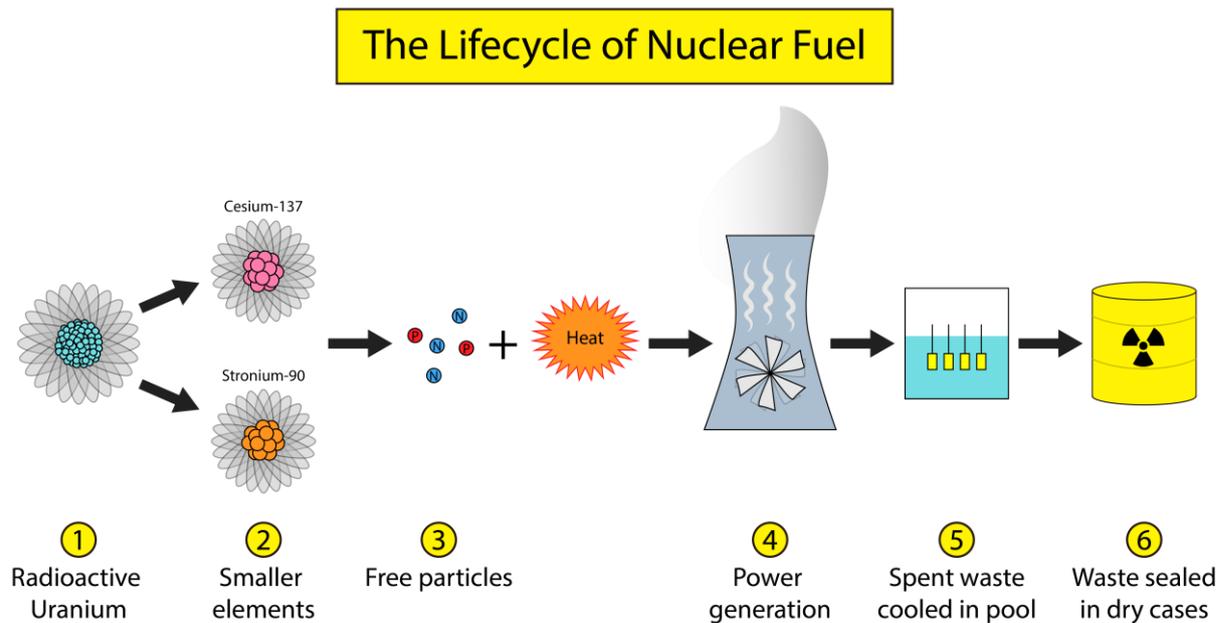
3. The passage describes a new method, still only a theoretical one, for the disposal of radioactive waste, \_\_\_\_\_.

- a) which uses bore holes so that all sites are suitable;
- b) at a depth considerably less than that normally recommended but the chosen site must meet certain geological requirements;

- c) which, unfortunately, increases the time needed for cooling the waste before final disposal;
- d) in which the radioactive isotopes are prevented from releasing heat;
- e) whereby the heat produced by that waste will serve to seal it safely into the rock under which it has been buried.

#### Text 4

### The Chernobyl Disaster



The Chernobyl disaster (also referred to as Chernobyl or the Chernobyl accident) was a catastrophic nuclear accident that occurred on 26 April 1986 at the Chernobyl Nuclear Power Plant in Ukraine (then officially the Ukrainian SSR), which was under the direct jurisdiction of the central authorities of the Soviet Union. An explosion and fire released large quantities of radioactive particles into the atmosphere, which spread over much of the western USSR and Europe.

The Chernobyl disaster was the worst nuclear power plant accident in history in terms of cost and casualties. It is one of only two classified as a level 7 event (the maximum classification) on the International Nuclear Event Scale, the other being the Fukushima Daiichi nuclear disaster in 2011. The battle to contain the contamination and avert a greater catastrophe ultimately involved over 500,000 workers and cost an estimated 18 billion rubles. During the accident itself, 31 people died, and long-term effects such as cancers are still being investigated.

*Read the passage and choose the best answer to each question.*

1. What type of disaster was the Chernobyl disaster?

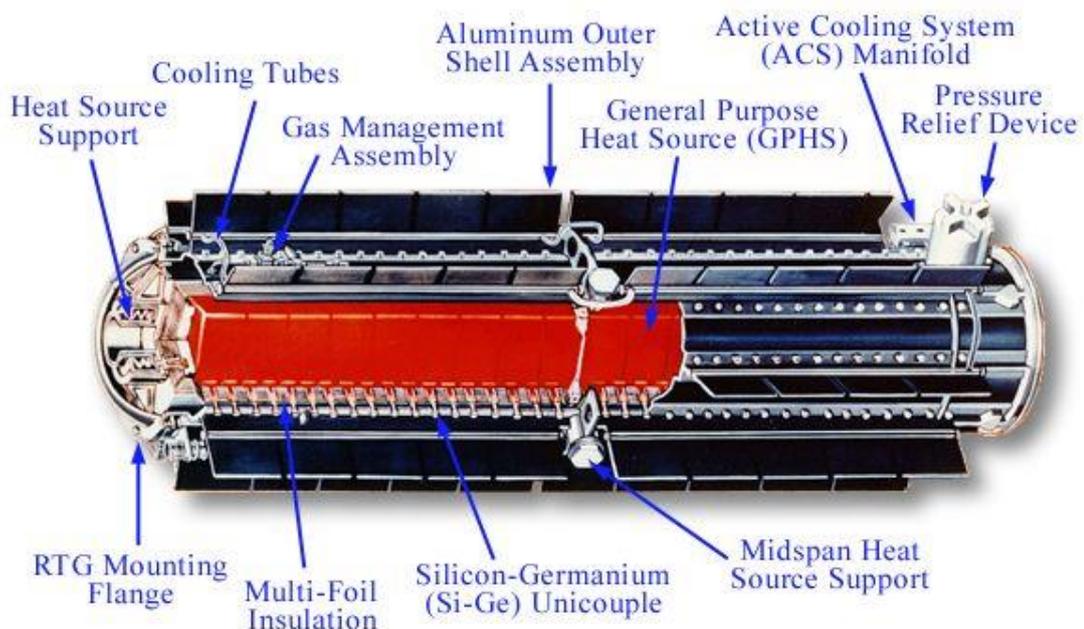
- a) an explosion;

- b) a fire;
  - c) A nuclear accident.
2. *Where did the accident occur?*
    - a) Russia.
    - b) Japan.
    - c) Ukraine.
  3. *What is closest in meaning to 'jurisdiction' in paragraph one?*
    - a) occupation;
    - b) control;
    - c) courts.
  4. *How were radioactive particles released into the atmosphere?*
    - a) by an explosion and fire;
    - b) by being exposed to air;
    - c) in small quantities.
  5. *How many people lost their lives during the accident itself?*
    - a) 1986.
    - b) 500000.
    - c) 31.
  6. *How many nuclear power plant accidents have been classified at a level 7?*
    - a) 2.
    - b) 7.
    - c) 1

**Text 5**

**Is the next step in space nuclear power?**

**GPHS-RTG**



There are two fundamental sources of nuclear power for applications in space; reactors and radioisotope power supplies. Whereas a reactor produces heat through the controlled fission of uranium fuel, a radioisotope thermo electrical generator, or RTG, derives heat simply from the decay of highly radioactive material. In both cases, the heat is converted to electric power. The RTG is best suited for power requirements of less than a few kilowatts, the reactor for higher power levels.

Although the US has launched only one nuclear reactor into orbit, an ambitious reactor development project has been underway for most of the past decade. As currently planned, the SP-100 reactor would generate approximately 100 kilowatts of electricity from 2.5 megawatts of thermal power – far more power than any reactor flown to date. It would contain about 190 kilograms of uranium nitride fuel enriched to 96% in the fissionable isotope, Uranium 235.

The entire reactor is intended to be approximately 3000 kilograms, a mass-to-power ratio of 30 kilograms per kilowatt. Except for a small “shallow shield” which helps to protect the payload from the intense radiation emitted during operation, the SP-100 is designed to be unshielded.

The reactor would be cooled by liquid lithium metal which would flow through pipes to thermo-electric cells – circuits containing junctions between dissimilar metals that can transform a temperature difference into a voltage difference. These cells would convert about 4% of the reactor generated heat into electricity. The considerable waste heat would be ejected through a set of radiator panels, with a surface area of around 100 sq metres.

Nearly every component of the SP-100 design extrapolates beyond existing technological experience making it uncertain whether the program will be able to achieve its goals. Moreover, the reactor has been designed in the absence of a proposed mission and so any specific application is likely to require substantial revision.

Flight-testing of the SP-100 is not correctly possible; cost estimates for the test alone exceed \$1 billion, a discouragingly large sum. Further more, as the program moves towards its second decade, a specific mission for the SP-100 has still not been defined.

*1. Questions 1-2. Complete the following table by writing the missing information:-*

Sources of nuclear power

Type 1

(1) \_\_\_\_\_ Type 2

(2) \_\_\_\_\_

Produces heat from controlled fission of Uranium fuel Derives heat from decay of highly radioactive materials.

Heat is converted to electric power.

2. Questions 3-6. Write the answers for the following questions;
- 3) What is the planned weight of the reactor Sp-100?
  - 4) Describe the power to mass ratio of the SP-100 1 kw \_\_\_\_.
  - 5) Name the cooling material of Sp-100.
  - 6) How much of the heat generated by the reactor on board the SP-100 is actually converted to electricity?

Question 7. Which of the following is true according to the passage?

- 7) The SP-100 has been precisely designed to meet the anticipated requirements of the US space program.
- 8) The SP-100 has been designed without reference to a particular space program.

## Unit 7

### Reduce. Reuse. Recycle

## Text 1

### No-waste recycling guide

No-Waste is a goal and a process that involves individuals, communities, businesses and all levels of government. It leads to a future where trash is a thing of the past. Solid waste isn't hidden or buried in landfills but fully utilised as the valuable resource that it is. Through redesign, reduction, reuse, repair, recycling, composting and changes in attitude, we aim to create opportunity and wealth instead of garbage.

# UO ZERO WASTE SORTING GUIDE

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <ul style="list-style-type: none"> <li> CUPS</li> <li> UTENSILS</li> <li> SNACK BAGS</li> <li> WRAPPERS</li> <li> PLASTIC TUBS/JARS</li> <li> SAUCE PACKETS</li> <li> PLASTIC BAGS/FILM</li> <li> LIDS &amp; CAPS</li> <li> DRINK CARTONS</li> <li> ??? OTHER</li> </ul> |  <p><b>COMPOST</b><br/>FOOD<br/>PAPER FOODWARE<br/>(NAPKINS, PLATES, BOWLS)<br/>ITEMS LABELED<br/>"COMPOSTABLE"</p> <p><b>NO CUPS</b></p> <ul style="list-style-type: none"> <li> ALL FOOD</li> <li> NAPKINS</li> <li> PAPER PLATES</li> <li> CHOPSTICKS</li> </ul> |  <p><b>GLASS<br/>METAL<br/>PLASTIC</b><br/>BOTTLES &amp;<br/>JUGS ONLY</p> <p><b>NO CUPS</b></p> <ul style="list-style-type: none"> <li> BOTTLES &amp; CANS</li> <li> GLASS JARS</li> <li> PLASTIC BOTTLES &amp; JUGS</li> </ul> <p>*NO LIDS OR CAPS</p> <p>*BOTTLES - OPENING SMALLER THAN BASE</p> <p>*JUGS - INCLUDES HANDLE</p> |  <p><b>PAPER</b><br/>OFFICE PAPER<br/>NEWSPAPER<br/>PAPERBOARD<br/>MAGAZINES</p> <p><b>NO CUPS<br/>NAPKINS<br/>PLATES</b></p> <ul style="list-style-type: none"> <li> OFFICE PAPER</li> <li> NON-WHITE PAPER</li> <li> NEWSPAPER</li> <li> MAGAZINES</li> <li> PAPERBOARD</li> <li> ENVELOPES</li> </ul> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**WHEN IN DOUBT... THROW IT OUT!**

Contact the UO Zero Waste Program 541-346-1529 - [cpfm.uoregon.edu/zerowaste](mailto:cpfm.uoregon.edu/zerowaste) - @UOZeroWasteProgram



**RECYCLING - Inside your blue box**

Every second week: Put garbage and recyclables out before 8 AM on collection day.

### **Household Plastic containers**

Includes milk jugs, yoghurt containers and detergent bottles. Excludes containers made of foam, plastic containers which held ammonia-based products, or metal bottle lids. Rinse to remove food or residue. Leave labels on, flatten or stack plastic containers to reduce space required.

### **Glass containers**

Leave labels on. Rinse. Discard caps. No other types of glass such as kitchenware, drinking glasses, window glass, light bulbs, mirrors or any broken glass.

### **Metals**

Food and beverage containers. Cans - rinse and remove labels, flatten and fold together. Foil trays - rinse, flatten and fold together. No metal pots, take out container lids, cigarette wrappings.

### **Beside your blue box**

#### **YELLOW BAG**

Household paper - junk mail, envelopes, brochures, paper bags, egg cartons (fibre only); box packaging such as cereal, shoe boxes, paper towel cores, white and coloured office paper, telephone books. Remove liners, flatten packaging and place inside the bag.

No drinking boxes, paper towels or waxed paper.

#### **BLUE BAG**

Newspapers, inserts, sales flyers, magazines and catalogues. Remove magazine covers, perfumed inserts. No books or soiled newspapers.

#### **TEXTILES, CLOTHING AND LINENS**

Race clean textiles in a separate plastic shopping bag tied with string.

#### **CARDBOARD**

Packing boxes, liquor boxes.

Flatten bundles and tie - no larger than 30 x 30 x 8. Place beside the blue box. No waxed or coated boxes, soiled pizza boxes.

*Questions 1-3. Choose ONE item only from the list below to go in each recycling container.*

1) in the Blue Box \_\_\_\_\_

2) in the Yellow Bag \_\_\_\_\_

3) in the Blue Bag \_\_\_\_\_

#### **LIST OF ITEMS FOR RECYCLING**

telephone book

old clothing

wed pizza delivery box

ceramic cup

heavy cardboard

packing box  
magazines  
old textbook  
aluminium drink  
light bulb

Questions 4 – 7. Look at the following statements. Choose the correct answer.

YES if the answer is “yes”

NO if the answer is ‘no’

NOT GIVEN if there is no information about this in the passage

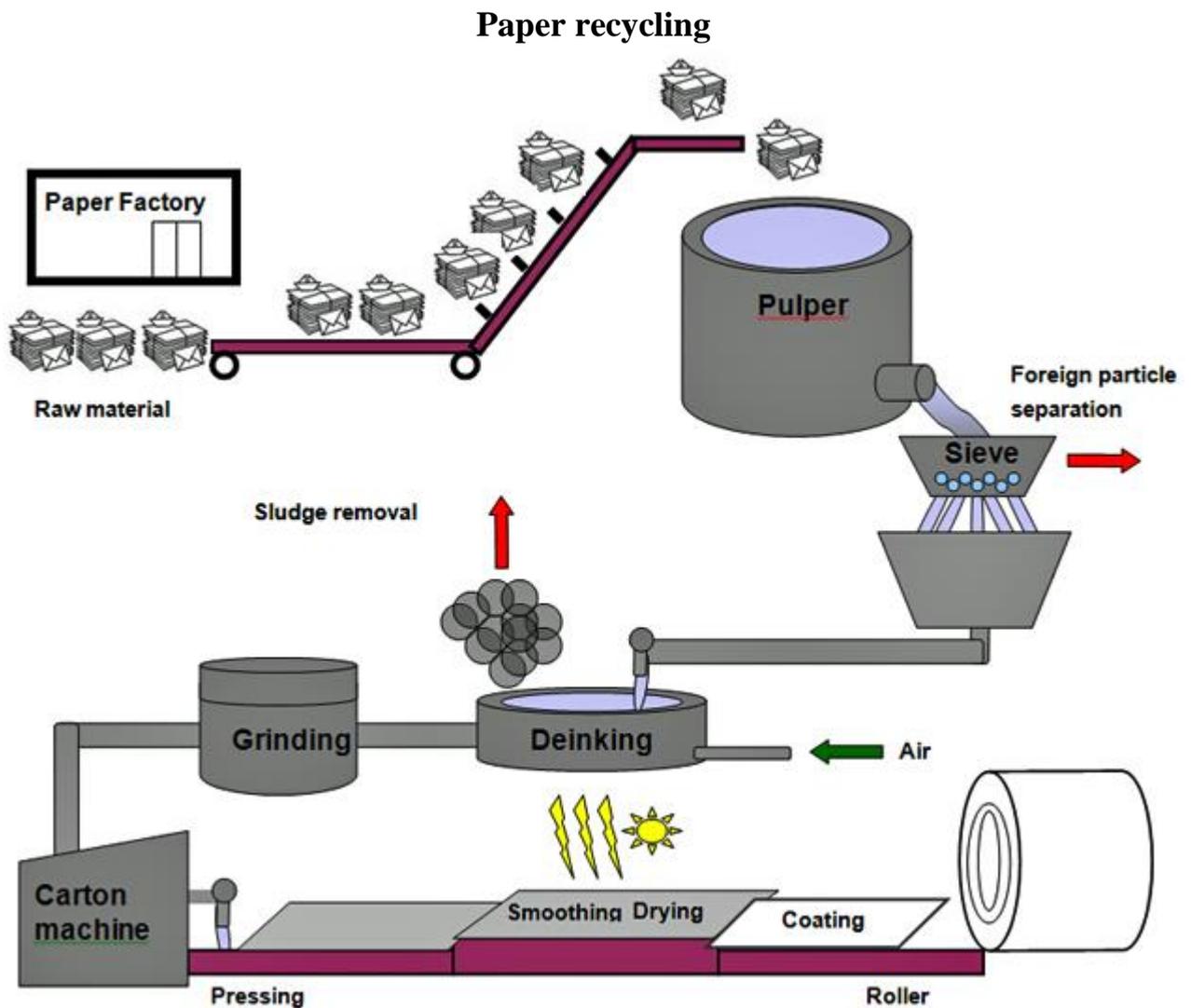
4) Do I put out items for recycling every other week?

5) Should I remove labels from food cans?

6) Can I recycle a broken window?

7) Is there a separate collection for large household items?

## Text 2



A) Paper is different from other waste produce because it comes from a sustainable resource: trees. Unlike the minerals and oil used to make plastics and metals, trees are replaceable. Paper is also biodegradable, so it does not pose as much threat to the environment when it is discarded. While 45 out of every 100 tonnes of wood fibre used to make paper in Australia comes from waste paper, the rest comes directly from virgin fibre from forests and plantations. By world standards, this is a good performance since the worldwide average is 33 percent waste paper. Governments have encouraged waste paper collection and sorting schemes and at the same time, the paper industry has responded by developing new recycling technologies that have paved the way for even greater utilization of used fibre. As a result, industry's use of recycled fibres is expected to increase at twice the rate of virgin fibre over the coming years.

B) Already, waste paper constitutes 70% of paper used for packaging and advances in the technology required to remove ink from the paper have allowed a higher recycled content in newsprint and writing paper. To achieve the benefits of recycling, the community must also contribute. We need to accept a change in the quality of paper products; for example, stationery may be less white and of a rougher texture. There also needs to support from the community for waste paper collection programs. Not only do we need to make the paper available to collectors but it also needs to be separated into different types and sorted from contaminants such as staples, paperclips, string and other miscellaneous items.

C) There are technical limitations to the amount of paper which can be recycled and some paper products cannot be collected for re-use. These include paper in the form of books and permanent records, photographic paper and paper which is badly contaminated. The four most common sources of paper for recycling are factories and retail stores which gather large amounts of packaging material in which goods are delivered, also offices which have unwanted business documents and computer output, paper converters and printers and lastly households which discard newspapers and packaging material. The paper manufacturer pays a price for the paper and may also incur the collection cost.

D) Once collected, the paper has to be sorted by hand by people trained to recognise various types of paper. This is necessary because some types of paper can only be made from particular kinds of recycled fibre. The sorted paper then has to be repulped or mixed with water and broken down into its individual fibres. This mixture is called stock and may contain a wide variety of contaminating materials, particularly if it is made from mixed waste paper which has had little sorting. Various machineries are used to remove other materials from the stock. After passing through the repulping process, the fibres from printed waste paper are grey in colour because the printing ink has soaked into the individual fibres. This recycled material can only be used in products where the grey colour does not matter, such as cardboard boxes but if the grey colour is not acceptable, the fibres must be de-inked. This involves adding chemicals such as caustic soda or other alkalis, soaps and detergents, water-hardening agents such as calcium chloride,

frothing agents and bleaching agents. Before the recycled fibres can be made into paper they must be refined or treated in such a way that they bond together.

E) Most paper products must contain some virgin fibre as well as recycled fibres and unlike glass, paper cannot be recycled indefinitely. Most paper is down-cycled which means that a product made from recycled paper is of an inferior quality to the original paper. Recycling paper is beneficial in that it saves some of the energy, labour and capital that go into producing virgin pulp. However, recycling requires the use of fossil fuel, a non-renewable energy source, to collect the waste paper from the community and to process it to produce new paper. And the recycling process still creates emissions which require treatment before they can be disposed of safely. Nevertheless, paper recycling is an important economic and environmental practice but one which must be carried out in a rational and viable manner for it to be useful to both industry and the community.

*Questions 1-7. Complete the summary below of the first two paragraphs of the Reading Passage. Choose ONE OR TWO WORDS from the Reading Passage for each answer.*

### SUMMARY

From the point of view of recycling, paper has two advantages over minerals and oil in that firstly it comes from a resource which is \_\_\_\_ (1) and secondly, it is less threatening to our environment when we throw it away because it is \_\_\_\_ (2). Although Australia's record in the re-use of waste paper is good, it is still necessary to use a combination of recycled fibre and \_\_\_\_ (3) to make new paper. The paper industry has contributed positively and people have also been encouraged by \_\_\_\_ (4) to collect their waste on a regular basis. One major difficulty is the removal of ink from used paper but \_\_\_\_ (5) are being made in this area. However, we need to learn to accept paper which is generally of a lower \_\_\_\_ (6) than before and to sort our waste paper by removing \_\_\_\_ (7) before discarding it for collection.

*Questions 7-11. Look at paragraphs C, D, and E and, using the information in the passage, complete the flow chart below. Write your answers in boxes 8 - 12 on your answer sheet. Use ONE OR TWO WORDS for each answer.*

|                                                                                                                     |                                                                             |
|---------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| Waste Paper collected from:<br>Factories<br>Retail stores<br>_____ (8)<br>Paper converted and printed<br>Households | The Paper is then<br>_____ (9)<br>↓<br>and<br>_____ (10)<br>by adding water |
| The fibres are than ←                                                                                               | ↓<br>Chemicals are added in order to                                        |

|            |            |
|------------|------------|
| _____ (12) | _____ (11) |
|------------|------------|

**Listening.**

**Recycle.**

[https://www.ieltsexam.net/practice\\_tests/41/IELTS\\_Listening\\_4\\_Section\\_4/3](https://www.ieltsexam.net/practice_tests/41/IELTS_Listening_4_Section_4/3)

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**Speaking.**

**RECYCLE:** How can we re-use these things? Complete this table with your partner(s). Change partners often and share what you wrote.

|                 | Recycled | Re-used |
|-----------------|----------|---------|
| Mobile phones   |          |         |
| Car tyres       |          |         |
| Plastic bottles |          |         |
| Fridges         |          |         |
| Magazines       |          |         |
| Shoes           |          |         |

**Text 3**

**Recycling**

*Recycling* is taking used materials and waste and then turning it into new, useful products. Recycling waste into new products reduces the amount of materials that would have been needed if the product had to be made all over again.

For example, most paper is made from trees, but if old paper is recycled, less trees would be needed. Recycling uses less energy, and helps with pollution control. There are three important steps for recycling to be successful:

First, the items to be recycled must be *collected*. Many communities require residents to recycle and collect the materials using large bins or cans. The recyclables are picked up regularly, just like the other trash and waste products.

Second, the recyclables must be *sorted* into the different materials. The most common materials include paper, plastic, glass, and aluminum, which must be separated from each other.

Third, the recycled items must be *processed* at a recycling plant. Since there are different materials that need to be recycled, each has its own method of turning the old into the renewed.

Paper, including newspapers, magazines, cardboard, books, and envelopes can all be recycled into reusable products. At a paper recycling plant, the old paper is chopped into tiny pieces. Next, water is added, and the material is turned into

pulp. The pulp is then cleaned to remove the old ink. Finally, chemicals are added and the old paper is bleached white. It is now ready to be turned into new paper and other paper products.

Plastic is also a common recyclable product, including water, soda, and other drink bottles; plastic bags, wrappers, and many more items. To recycle old plastic, it is first divided by type, and then ground into flakes or chips. The flakes and chips are cleaned thoroughly, melted down and formed into pellets. The pellets are then used in a variety of ways by many different manufacturers.

Glass recycling also includes soda and other drink bottles, as well as jars, broken pieces of glass, and many other glass products. Before the glass is recycled, though, the different plastic lids must first be separated from the bottles. All of the glass is then cleaned thoroughly, and then crushed into tiny pieces. Next, it is melted and sent to manufacturers who add other substances depending on their use. The glass is then heated again and made into liquid glass.

Finally, aluminum is another material recycled quite often, which also includes soda and juice cans, tomato cans, and all other products made from aluminum. At a metal recycling plant, a giant magnet is used to separate the steel cans from the aluminum cans. A magnet will not attract aluminum so it is easy to separate the steel from the aluminum cans. The cans are then washed, crushed, and condensed. A hot furnace is used to remove the labeling, melted, made into bars, and finally flattened into sheets.

Two more things must take place for recycling to be successful. First, people must choose to recycle the things they use, and second, when buying things, it is helpful that people purchase items made using recycled materials like paper, plastic, glass, or aluminum.

In summary, three steps for recycling include collecting, sorting, and processing. Each material also has several more steps that must occur in order for each it to be reused gain as a useful product.

*1. Which of the following is taking used materials and waste and then turning it into new, useful products?*

- a) Processing.
- b) Sorting.
- c) Collecting.
- d) Recycling.

*2. Which step for recycling involves recyclables being picked up regularly, just like the other trash and waste products?*

- a) Processing.
- b) Sorting.
- c) Collecting.
- d) Reusing.

*3. The second step in the recycling process includes which of the following?*

- a) Processing.

- b) Sorting.
- c) Collecting.
- d) Reusing.

4. *The final step in recycling occurs at a plant is which of the following?*

- a) Processing.
- b) Sorting.
- c) Collecting.
- d) Reusing.

5. *Which of the following material is separated from other kinds of material by using a magnet?*

- a) Paper.
- b) Plastic.
- c) Aluminum.
- d) Glass.

6. *Which of the following material has water added to it and is then turned into pulp?*

- a) Paper.
- b) Plastic.
- c) Aluminum.
- d) Glass.

**Listening.**

[https://www.ieltsexam.net/practice\\_tests/41/IELTS\\_Listening\\_4\\_Section\\_4/385/](https://www.ieltsexam.net/practice_tests/41/IELTS_Listening_4_Section_4/385/)

<https://ieltonlinetests.com/ielts-recent-actual-test-answers-vol-6-listening-practice-test-6>

# RECYCLING & TRASH DISPOSAL

## SINGLE STREAM RECYCLING - ALL OF THESE ITEMS IN ONE BIN



### Paper Items

White & Colored Paper  
Shredded Paper  
Paper Bags  
Paper Plates & Bowls  
Paper Clamshells  
Wrapping Paper  
Newspaper  
Magazines & Catalogs  
Phone Books & Junk Mail  
Coffee Cups  
Books

### Cardboard

Cardboard Boxes  
Pizza Boxes  
Paperboard  
(i.e. paper towel rolls, cereal, tissue, and frozen food boxes)



### Plastics

Plastic Items #1-7  
Stiff Plastic Containers  
Shampoo Bottles  
Conditioner Bottles  
Milk Cartons  
Juice Boxes  
Large Plastics  
(i.e. laundry baskets)



### Metal Cans & Foil

Empty Aerosol Cans  
Aluminum Cans  
Aluminum Foil & Trays  
Metal Food Cans  
Spiral Cans  
(i.e. potato chip and nut cans)



### Glass Jars & Bottles

Beverage Bottles  
Food Jars  
Wine Bottles

### Tips for Successful Recycling:

- Empty and flatten all cardboard items.
- Drain beverages and food items from containers.
- Place recycling in designated bins loose or in a clear plastic bag.
- Plastic recycling numbers can be located on the bottom of the plastic items.

## IN TRASH BIN



### Trash Only

Food Waste  
Plastic Bags  
Films & Wrappers  
Styrofoam  
Used Napkins  
Used Paper Towels  
Plastic Utensils

## KEEP OUT OF TRASH & RECYCLING

### ✗ Hazardous Materials

Chemicals, Broken Glass

### ✗ Universal Waste

Light Bulbs, Batteries, PDAs & Cell Phones, Chargers & Adapter, Electrical Cords

### ✗ Bulk Items

Computer Equipment, Electronics, Furniture, Mattresses, Mirrors

### Proper Disposal

- Call the Property Mgmt Office regarding the safe disposal of hazardous materials & bulk items.
- Universal Waste bins are located in the Property Management Office and/or Laundry Rooms.

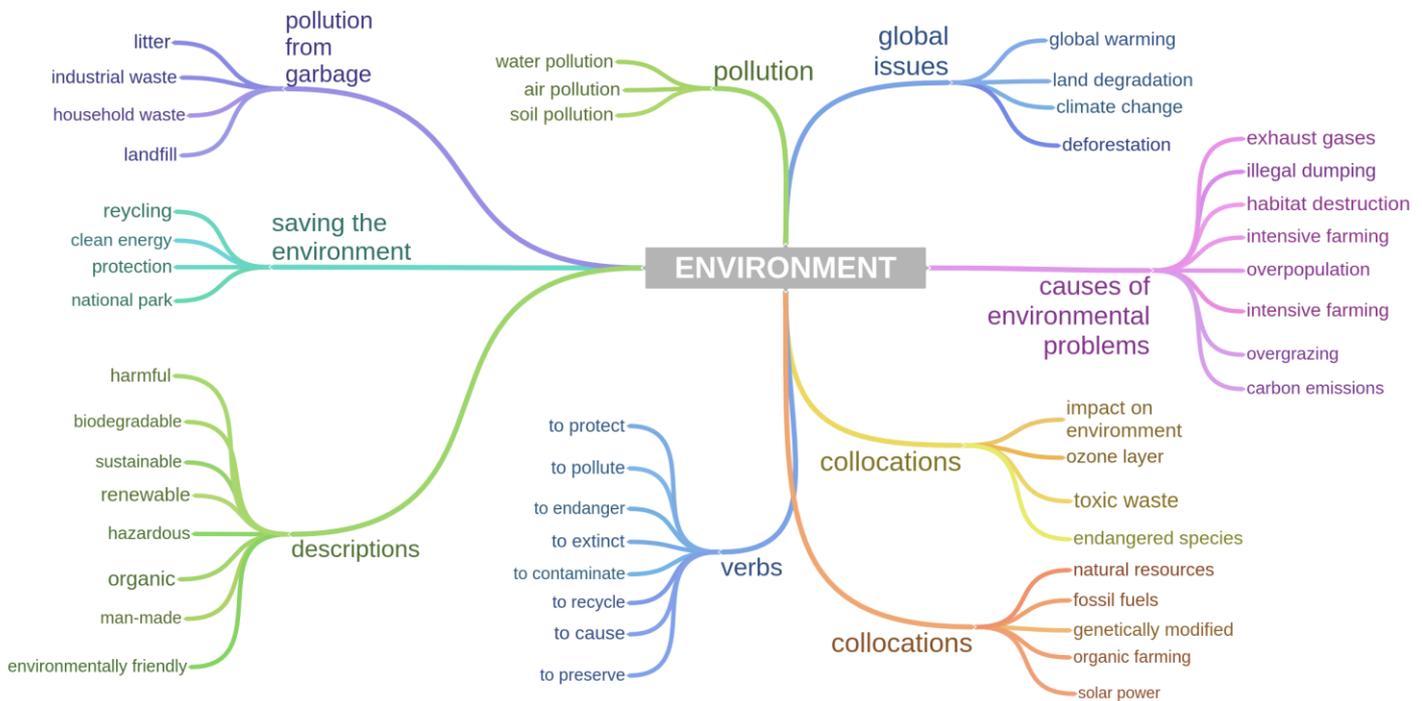
**THANK YOU!**

## Speaking.

1. Discuss the following questions:

Some people claim that not enough of the waste from homes is recycled. They say that the only way to increase recycling is for governments to make it a legal requirement. To what extent do you think laws are needed to make people recycle more of their waste?

2. Work in pairs. Discuss the diagram.



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Keys:

Unit 1

Acid Rain

Text 1

Acid Rain

- 1) acid deposition.
- 2) sulfur dioxide/ SO<sub>2</sub>.
- 3) acid rain.
- 4) damage.
- 5) Two.
- 6) plants and animals.
- 7) acidic gases and particles.
- 8) wind.
- 9) about two-thirds/2/3.
- 10) NOX.
- 11) (the rate of) these reactions.
- 12) on horizontal surfaces.
- 13) No.
- 14) Yes.
- 15) Not given.

Text 2

What is Acid Rain?

- 1) c.
- 2) a.
- 3) a.
- 4) d.
- 5) b.
- 6) d.

Speaking 1

Acid rain and global warming

- 1) a.
- 2) b.
- 3) c.
- 4) a.
- 5) c.
- 6) a.
- 7) b.
- 8) b.
- 9) c.

Text 2

Alarming Rate of Loss of Tropical Rainforest:

1) FALSE. 2) FALSE. 3) TRUE. 4) TRUE. 5) FALSE. 6) NOT GIVEN. 7) TRUE. 8) NOT GIVEN. 9) M. 10) E. 11) G. 12) P. 13) J. 14) B/

Text 2

Deforestation in the 21<sup>st</sup> century

- 1) d.
- 2) e.
- 3) a.
- 4) f.
- 5) a.
- 6) g.
- 7) c.
- 8) d.
- 9) b.
- 10) c.
- 11) forest footprint.
- 12) decaying plants.
- 13) 60 percent.

Text 3

Rainforests rule!

- 1) d.
- 2) c .
- 3) a .
- 4) g.
- 5) f.
- 6) e.
- 7) b.
- 8) c.
- 9) c.
- 10) a.
- 11) b.
- 5) a.
- 6) b.

Text 4

- 1) c.
- 2) b.
- 3) a.
- 4) b.
- 5) b.
- 6) a.

Unit 3

Destruction of habitats

Text 1

## Overfishing

- 1) VIII.
- 2) V.
- 3) IX.
- 4) VII.
- 5) I.
- 6) III.
- 7) II.
- 8) C.
- 9) G.
- 10) D.
- 11) F.
- 12) B.
- 13) A.

## Text 3

### Zoo Conservation Programmes

- 1) Y.
- 2) Y.
- 3) NG.
- 4) N.
- 5) N.
- 6) NG.
- 7) Y.
- 8) B.
- 9) C.
- 10) A.
- 11) A.
- 12) D.
- 13) E.

## Text 3

### A Wonder Plant

#### Answer:

- 1) E.
- 2) D.
- 3) B.
- 4) A.
- 5) D.
- 6) C.
- 7) B.
- 8) A.
- 9) B.

## Text 4

- 1) C.

- 2) D.
- 3) B.
- 4) A.
- 5) D.
- 6) A.
- 7) C.
- 8) B.
- 9) A.
- 10) C.
- 11) B.
- 12) B.

#### Text 6

- 1) f.
- 2) a.
- 3) e.
- 4) b.
- 5) d.
- 6) F.
- 7) T.
- 8) T.
- 9) F.
- 10) T.
- 11) T.
- 12) T.
- 13) F.
- 14) poachers and development.
- 15) irritating them.
- 16) the radio-collars failed.
- 17) monitor biodiversity.
- 18) collect several tracks.

#### Unit 4

##### Pollution

##### Text 2

##### Air pollution

- 1) Los Angeles.
- 2) London.
- 3) Singapore.
- 4) London.
- 5) Los Angeles.
- 6) YES.
- 7) YES.
- 8) NO.
- 9) NO.

10) NO.

11) A.

12) D.

13) C.

Text 3

Indoor Pollution

1) D.

2) B.

3) D.

4) B.

5) C.

6) A.

7) C.

8) D.

9) A.

10) F.

11) H.

12) I.

13) G.

Text 4

Light Pollution

1) VIII.

2) VII.

3) VI.

4) IV.

5) III.

6) deter crime.

7) air pollution.

8) block light.

9) education.

10) True.

11) False.

12) Not given.

13) True.

Unit 5

Holes in ozone layer

Text 1

The ozone hole

1) f.

2) h.

3) b.

4) d.

5) a.

- 6) e.
- 7) H.
- 8) E.
- 9) F.
- 10) A.
- 11) D.
- 12) B.
- 13) B.
- 14) E.

#### Text 2

- 1) c.
- 2) c.
- 3) a.
- 4) a.
- 5) c.
- 6) c.

#### Text 3

- 1) F.
- 2) F.
- 3) T.
- 4) F.

#### Text 4

- 1) b.
- 2) d.

#### Unit 6

#### Rubbish. Waste

#### Text 1

#### What a waste!

- 1) c.
- 2) i.
- 3) g.
- 4) d.
- 5) d.
- 6) b.
- 7) domestic.
- 8) government.
- 9) landfills.
- 10) outmoded.
- 11) reprocessing/ recycling.
- 12) degrade.
- 13) recycle.
- 14) consequence.

#### Text 2

## The Garbage problem

- 1) b.
- 2) a.
- 3) d.
- 4) d.
- 5) d.
- 6) a.
- 7) b.
- 8) c.

## Unit 7

Reuse. Reduce. Recycle.

### Text 1

#### No-waste recycling guide

1. E.
2. C.
3. B.
4. D.
5. A.
6. D, E (in either order, both required for 1 mark).
7. A, C (in either order, both required for 1 mark).
8. aluminium drink can.
9. telephone book.
10. Magazines.
11. YES.
12. YES.
13. NO.
14. NOT GIVEN.

### Text 2

#### Paper recycling

- 1) sustainable.
- 2) biodegradable .
- 3) virgin fibre/ pulp.
- 4) governments/ the government .
- 5) advances.
- 6) quality.
- 7) contaminants.
- 8) offices.
- 9) sorted.
- 10) (re)pulped .
- 11) de-ink/ remove ink/ make white .
- 12) refined.

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PROFESSIONAL ORIENTED FOREIGN LANGUAGE

Study guide for 3<sup>rd</sup> year students of 5B073100 – Life safety and Environmental protection speciality

Editor

G.Mukhametsariyeva

Signed for publication \_\_\_\_\_ 11. 2019

Edition 100 copies. Format 60x84 <sub>1/16</sub>

Typographical paper № 2

Volume 6.4 quires

Order № \_\_\_\_\_

Price 3200 tenges

Non-Profit JSC «AUPET»

126, Baytursynov st., Almaty

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«Almaty University of power engineering and telecommunications»