Dorota Dziuba

# ENVIRONMENTAL ISSUES

## Angielski dla studentów ochrony środowiska

Wydanie II uzupełnione i poprawione

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## 1. Air pollution

**Warm-up**

- Think of any words you can associate with air pollution, note them down and then compare your list with your partner's.
- Think of any possible sources of air pollution and write them down on the blackboard.

**Exercise 1**

Match the words to the definitions, then read the text and underline them.

| | |
|---|---|
| 1. liquid | a. fumes from an engine |
| 2. remote | b. a process of changing food by an organism |
| 3. exhaust | c. rough |
| 4. dilute | d. a not planned product or result |
| 5. digestion | e. a substance that can flow |
| 6. abrasive | f. continuing |
| 7. a by-product | g. a very small amount |
| 8. soot | h. distant |
| 9. trace | i. black powder left after burning |
| 10. persistent | j. containing more water |

Air pollution can be described as any harmful material that is present in the atmosphere, and therefore its causes are numerous and highly varied. Some of its sources, like volcanic eruptions, are natural, others are caused by human activities, for example by the burning of fossil fuels. Pollutants can appear in the form of solid particles, liquid droplets, or gases. Because they can travel on wind and do not respect political borders, they are not only concentrated over industrialized areas which generated them but they can also be found in remote locations.

Pollutants can be classified as either primary or secondary. Usually, primary pollutants are substances directly emitted from a process, such as ash from a volcanic eruption, carbon monoxide from car exhausts or sulphur dioxide released from factories. Secondary pollutants form in the air when primary pollutants react or interact creating, for example, dilute acids, which fall as acid rain.

Natural sources of air pollution can be quite dangerous at times. They may include dust picked up by wind from large areas with little or no vegetation, such as deserts and semi-deserts; the emission of methane resulting from the digestion of food by animals such as cattle; smoke and carbon monoxide from wildfires caused by natural reasons. Volcanic activities are perhaps the largest single sources of natural air pollution. These can produce clouds of abrasive ash particulates and other harmful chemical substances such as chlorine and sulphur.

Yet, the most well-known and serious causes of air pollution are man-made. The burning of oil products and other fossil fuels is a common cause of pollution, especially in cities. When petrol is burned, it produces carbon dioxide or monoxide. Small particles of soot are also released into the atmosphere, along with trace amounts of other harmful substances. All that, together with airborne particles, might create persistent smog, which plagues cities.

Other man-made causes of air pollution include smoke from industry and power stations. The substances emitted at these sources can contain sulphur dioxide and nitrogen dioxide, which are responsible for the formation of acid rain. Chlorofluorocarbons (CFCs) are the ozone layer-destroying chemicals emitted from cooling systems in old refrigerators, but they have been banned from use in new ones.

Air pollution influences the world and people in a number of ways. The primary problems are diseases of the heart and lungs. Asthma and respiratory allergies are on the rise, due to irritation by chemicals and particulates. Some pollutants are damaging the atmosphere, exposing the earth to harmful ultraviolet radiation and give way to secondary problems, such as acid rain and death of vegetation.

**Exercise 2**
Label the statements True or False.

1. There are few sources of air pollution.
2. Pollution is present in industrial areas only.
3. Secondary pollution is the result of primary pollution.
4. Natural sources of air pollution are always safe.
5. Ashes can come from volcanic activities or forest fires.
6. Humans are responsible for most air pollution.
7. Smog is no longer a problem in industrialized cities.
8. Human health is not at risk because of air pollution.

**Exercise 3**
Match the words from Column A to those from Column B to make expressions from the text.

| **A** | **B** |
|---|---|
| 1. cooling | a. acids |
| 2. dilute | b. allergies |
| 3. harmful | c. amounts |
| 4. industrialized | d. areas |
| 5. persistent | e. erosion |
| 6. primary | f. eruptions |
| 7. respiratory | g. material |
| 8. solid | h. particles |
| 9. trace | i. pollutants |
| 10.volcanic | j. smog |
| 11.wind | k. systems |

Now use some of them in the following sentences:
1. Pollution in ..... is always higher than in rural ones.
2. Air in the cities contains various gases and ..... such as ashes.
3. ..... in old refrigerators can be harmful to the environment.
4. Extremely small volumes of a substance are called .....
5. ..... are dangerous because of considerable amounts of gases, ashes and lava released.

**Exercise 4**
Complete the sentences with words derived from the words in capital letters.

| | |
|---|---|
| 1. ..... with machine parts were loaded on trucks. | CONTAIN |
| 2. Artists must have a very ..... imagination. | CREATE |
| 3. Terrorist attacks ….....  the peace process in the area. | DANGER |
| 4. The process of ..... made land useless for farming. | DESERT |
| 5. Long ….....…..… to the Sun is not good for your skin. | EXPOSE |
| 6. A lot of ..... substances were present in the air. | GAS |
| 7. You can hold this snake – it is ..... | HARM |
| 8. The company wanted to .....…. its operations. | LARGE |
| 9. His ..... refusal to pay led him to prison. | PERSIST |
| 10. They are looking for financial support from ..... sources. | VARY |

**Exercise 5**
Find synonyms in the text for the following words:

boundary, comprise, damaging, distant, diverse, fluid, forbidden, prevalent, rough, solitary.

## 2. Global warming

**Warm-up**

- What consequences of global warming can you think of? Discuss with your partner.

**Exercise 1**

Match the words to the definitions, then read the text and underline them.

| | |
|---|---|
| 1. attributed to | a. often happening |
| 2. to desalinate | b. space where things can be kept |
| 3. frequent | c. ground that stays permanently frozen |
| 4. grave | d. to make less salty |
| 5. manure | e. to divide |
| 6. permafrost | f. a serious disease that spreads quickly to a lot of people |
| 7. a plague | g. low land that is often covered with water |
| 8. to split | h. serious and worrying |
| 9. a storage | i. believed to be the result of a particular event |
| 10. a wetland | j. solid waste from farm animals |

Global warming is the rise in the average temperature of Earth's atmosphere and oceans since the 19th century. The phenomenon has been widely discussed for some time and its causes are presently one of the most studied subjects in the world. They can be divided into two groups: man-made and natural. One of the natural causes is that the Earth goes through a cycle of a climate change which usually lasts about 40,000 years. Permafrost, which is a solid structure of frozen soil in the arctic and subarctic regions, is warmed up. For thousands of years it has acted as a storage place for greenhouse gases like carbon dioxide and methane. Permafrost in some areas is now starting to give back its carbon. Another natural cause is a release of methane from wetlands and arctic tundra.

There are many causes of global warming that can be attributed to activities of man. They have led to an increase in greenhouse gases which prevent the reflection of the rays from the Sun and cause the temperature to rise. The carbon dioxide concentration in the air has increased due to the emissions from cars, airplanes, power plants, industries and fuel burning. Mining of coal and oil allows methane to escape. Methane is also released by manure from cattle breeding. Another problem is the CFC used in refrigerators, which destroys the stratospheric ozone layer. This ozone barrier absorbs the harmful ultraviolet rays of the Sun. Without it, the rays reach the Earth and cause the temperature to increase.

The warming has not been globally uniform and although it has been greatest over North America and Eurasia, it affects many parts of the world and is going to have several consequences, some of them quite grave. As northern countries warm up, disease-carrying insects migrate north, causing plagues like malaria in areas where it has not occurred before. The higher ocean temperature will most probably bring more frequent and stronger hurricanes. Some areas of the Earth will suffer severe droughts and heat waves. The ice caps melting in warmer temperatures is a serious danger. It will raise sea levels and flood several islands and continental areas. The global ecosystem will be thrown off balance when masses of fresh water will desalinate seas and oceans. It will endanger some species of marine animals or plants and only the most adaptable ones will survive. Scientists claim that unless emissions of heat-trapping gases are brought under control, the impact of climate change is likely to increase.

However, opinions differ considerably and sceptics claim that there are other explanations for climatic shift than man-made greenhouse gases. We cannot ignore the theory that some significant part of the changes is also a reflection of natural forces. A warmer and more active Sun combined with such natural factors as continental drift or orbital variations can change global temperatures by more than scientists have predicted.

**Exercise 2**
Label the statements True or False.

1. The global warming issue attracts a lot of interest in the press.
2. Permafrost often appears in equatorial areas.
3. Human activities contribute to the effect of global warming.
4. The consequences of global warming can be quite serious.
5. Global warming can be attributed to natural reasons for temperature shift.

**Exercise 3**
Match the words from Column A to those from Column B to make expressions from the text.

| **A** | **B** |
|---|---|
| 1. cattle | a. animals |
| 2. continental | b. breeding |
| 3. disease-carrying | c. cap |
| 4. global | d. consequences |
| 5. grave | e. discussed |
| 6. heat | f. drift |
| 7. ice | g. ecosystem |
| 8. marine | h. insects |
| 9. significant | i. part |
| 10. widely | j. wave |

Now use some of them in the following sentences:
1. Car crashes most often have .....
2. ..... are adapted to living in salty water.
3. Glaciers covering polar areas are called .....
4. The problem of unemployment has been ..... in the press recently.
5. Flies and fleas are only two of many .....

**Exercise 4**
Complete the sentences with words derived from the words in capital letters.

| | |
|---|---|
| 1. The film ..... of the book was a great success. | ADAPT |
| 2. This medicine shouldn't be taken in ..... with alcohol. | COMBINE |
| 3. I'm not sure if she understands the ..... of the situation. | GRAVE |
| 4. Our boss always demands ..... in every project we prepare. | PERFECT |
| 5. John has always been ..... about new ideas. | SCEPTIC |
| 6. The ..... of the dessert make her feel sick. | SWEET |
| 7. This course is ..... rather than practical. | THEORY |
| 8. Rebecca is a ..... self-centered egoist. | TYPE |
| 9. ..... neighbours are the best protection against burglary. | WATCH |
| 10. The builders are going to ..... the street. | WIDE |

**Exercise 5**
Translate into English

1. od pewnego czasu – f..... s..... t.....
2. przechodzić cykl – to g..... t..... a c.....
3. na skutek – d..... t.....
4. szkodliwe promienie ultrafioletowe – h.....u..... r.....
5. głęboka susza – s.....d.....
6. mieć zachwianą równowagę – to b..... t..... o..... b.....
7. wahania orbity – o..... v.....

## 3. Greenhouse effect

**Warm-up**

- What greenhouse gases do you know?

**Exercise 1**

Match the words to the definitions, then read the text and underline them.

| | |
|---|---|
| 1. abundant | a. decay, destruction |
| 2. to acquire | b. wet, spongy land |
| 3. decomposition | c. to become liquid |
| 4. infrared | d. to distribute in various directions |
| 5. to melt | e. to obtain |
| 6. to reflect | f. wastewater |
| 7. to scatter | g. to stop and hold |
| 8. sewage | h. to shine back |
| 9. a swamp | i. available in large quantities |
| 10. to trap | j. light that can be felt as heat but cannot be seen |

The Earth receives energy from the Sun mostly as short wavelength radiation. About one fourth of the energy is reflected or scattered back to space by clouds or atmospheric particles and approximately 20% is absorbed by clouds, gases, and particles. The portion of the Sun's radiant energy that is not absorbed, scattered, or reflected (about 50%) easily penetrates the Earth's atmosphere and reaches the surface. This energy can be used in a number of processes, like the melting of ice and snow, evaporation of water or plant photosynthesis. A considerable portion of energy warms up the ground surface. The heated Earth gives the heat back into the atmosphere as long wavelength radiation (infrared waves or heat energy). These longer waves are mostly reflected back to Earth by the atmosphere.

The greenhouse effect is a naturally occurring process which results from the fact that certain atmospheric gases, such as carbon dioxide, water vapour, nitrous oxide, ozone and methane are able to efficiently absorb the long wavelength radiation emitted from the Earth's surface, from clouds and from the atmosphere itself. The greenhouse gases radiate the acquired energy in all directions, including back to the Earth's surface causing further warming. Thus, greenhouse gases trap heat within the surface-troposphere system. The greenhouse effect depends on the concentration of greenhouse gases in the atmosphere. The gases can occur naturally and keep the Earth's climate warm and habitable, but human activities also considerably influence the process.

The most common greenhouse gases are as follows:

**Water vapour** is the dominant and most abundant of the greenhouse gases and the main contributor to the greenhouse effect. Human activity has little direct influence on its concentration. When the temperature rises, more water evaporates from ground sources and there is more water vapour in the atmosphere. Higher concentrations of water vapour absorb more thermal radiation from the Earth, warming the atmosphere even more, and the cycle continues.

**Carbon dioxide** can be released into the atmosphere via natural processes like decomposition, volcanic eruptions and wildfires, or as a result of human activities such as combustion of fossil fuels in cars, factories and electricity production. Its level is growing also because of deforestation, as trees use carbon dioxide in the process of photosynthesis and replace it with oxygen.

**Methane** is an extremely powerful warming agent although its lifetime in the atmosphere is only about 12 years. It is released through biological processes of decomposition in swamps or landfills. Human activities, including cattle raising or coal mining, also increase the level of methane in the air.

**Nitrous oxide** stays in the atmosphere for about 120 years. It is produced naturally from a variety of biological sources, particularly bacterial activities in rain forests. Human-related sources include agriculture and horticulture, sewage treatment and, what is most important, combustion of fossil fuels.

**Exercise 2**
Label the statements True or False.

1. Only about half the incident solar energy reaches the Earth's surface.
2. The heat emitted by the Earth surface warms up the atmosphere.
3. The most common greenhouse gas is water vapour.
4. Methane is the weakest of all greenhouse gases.
5. Nitrous oxide is a persistent gas with a long lifespan.

**Exercise 3**
Match the words from Column A to those from Column B to make expressions from the text.

| **A** | **B** |
|---|---|
| 1. atmospheric | a. agent |
| 2. cattle | b. contributor |
| 3. considerable | c. energy |
| 4. direct | d. influence |
| 5. heat | e. particles |
| 6. human-related | f. portion |
| 7. main | g. rising |
| 8. sewage | h. sources |
| 9. short | i. treatment |
| 10. warming | j. wavelength |

Now use some of them in the following sentences:
1. ..... is the main source of income of farmers in our neighbourhood.
2. Nitrous oxide is the ..... to air pollution caused by this factory.
3. All wastewater should undergo some processes of .....
4. Groundwater level is under the .....of surface water.
5. Samantha has wasted some of her money but a ..... is still intact.

**Exercise 4**
Complete the sentences with words derived from the words in capital letters.

| | |
|---|---|
| 1. Winning the prestigious award was a remarkable ..... | ACHIEVE |
| 2. The samples were sent to a laboratory for ..... | ANALYSE |
| 3. The scientists were discussing the problems of wildlife..... | CONSERVE |
| 4. The film festival in our city is a ..... event. | CYCLE |
| 5. His chances of ..... to the next grade are pretty poor. | PROMOTE |
| 6. The minister's ..... of new regulations were not supported. | PROPOSE |
| 7. All problems should be reported to the ..... desk. | RECEIVE |
| 8. Unfortunately most Jenny's marks at school are ..... | SATISFY |
| 9. We had an exceptionally ..... winter last year. | SNOW |
| 10. The chairman ..... the discussion and asked us to vote. | SUMMARY |

**Exercise 5**
Translate into English.

1. jedna czwarta – o..... f.....
2. zależeć od – to d..... o.....
3. niewielki bezpośredni wpływ na – l..... d..... i..... o.....
4. w wyniku – a..... a r.....
5. podnieść poziom – to i..... the l.....
6. różnorodne biologiczne źródła – a v..... of b..... s.....
7. obróbka ścieków – s..... t.....