

МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
Національний університет кораблебудування
імені адмірала Макарова

А. В. МІНЯЙЛОВА, О. С. ШЛЯХТІНА

SAVE THE PLANET
Навчальний посібник з англійської мови
для студентів спеціальностей
101 «Екологія» та 183 «Технології захисту
навколишнього середовища»

Рекомендовано Вченою радою НУК



2020

УДК 502.17:811.111(075.8)
М62

*Рекомендовано Вченою радою НУК імені адмірала Макарова
як навчальний посібник
(протокол № 8 від 30.08.2019 р.)*

Автори: А. В. Міняйлова, канд. пед. наук, доцент, зав.
кафедри сучасних мов;

О. С. Шляхтіна, старший викладач кафедри сучасних мов

Рецензенти: О. М. Дубова, доктор філологічних наук, професор, за-
вдувач кафедри прикладної лінгвістики, Національний уні-
верситет кораблебудування імені адмірала Макарова;

Н. М. Філіппова, кандидат філологічних наук, профе-
сор НУК, заступник завідувача кафедри прикладної лінгві-
стики, Національний університет кораблебудування імені
адмірала Макарова;

Т. І. Філіпп'єва, кандидат педагогічних наук, доцент кафе-
дри англійської філології, Миколаївський національний уні-
верситет імені В. О. Сухомлинського

Міняйлова А. В.

М62 Save the Planet : навчальний посібник з англійської мови для
студентів спеціальностей 101 «Екологія» та «Технології захисту
навколишнього середовища» / А. В. Міняйлова, О. С. Шляхтіна. –
Миколаїв : НУК, 2020. – 184 с.

ISBN 978-966-321-396-5

У посібнику наведено вправи та оригінальні тексти за професійною тема-
тикою, спрямовані на формування і розвиток у студентів спеціальностей
101 «Екологія» та 183 «Технології захисту навколишнього середовища» нави-
чок усного та писемного мовлення, читання наукової та довідникової літера-
тури за фахом, презентації результатів наукових робіт на міжнародних конфе-
ренціях, ведення наукових дискусій англійською мовою.

Навчальний посібник розроблений як основний курс дисципліни «Іноземна
мова за професійним спрямуванням» (англійська) і призначений для студентів
3–4 курсів спеціальностей 101 «Екологія» та 183 «Технології захисту навко-
лишнього середовища».

УДК 502.17:811.111(075.8)

© Міняйлова А. В., Шляхтіна О. С., 2020

© Національний університет кораблебудування
імені адмірала Макарова, 2020

ISBN 978-966-321-396-5

CONTENTS

Unit 1. Water Pollution	4
Unit 2. Land Pollution	28
Unit 3. Air Pollution	48
Unit 4. Other Kinds of Pollution	61
Unit 5. Global Warming	78
Unit 6. Man-Made Environmental Disasters	97
Unit 7. Waste Disposal Methods	125
Unit 8. Environmental Protection	150
References	182

UNIT 1. WATER POLLUTION

Key words

substance – речовина	to dump – звалювати
ice cap – крижана шапка	accumulation – накопичення
vapor – пара	dehydration – зневодення
urban – міський	to degrade – погіршувати
solvent – розчинник	nutrient – поживний
aquifer – водоносний горизонт	to dilute – розбавляти
precipitation – опади	vulnerable – вразливий
evaporation – випаровування	to encourage – заохочувати
to irrigate – зрошувати	scarcity – дефіцит
irrigation – зрошення	crude oil – сирова нафта
to exist – існувати	to refine – очищати
disease – хвороба	to penetrate – проникати
oil spillage – нафтова пляма	oil slick – нафтова плівка
chemicals – хімікати	to leak – протікати
waste – відходи	oil leakage – витік нафти
pollutant – забруднювач	sewage – стічні води

Ex.1.1. We drink, wash and cook with it. But how much do you know about water, one of the world's most precious resources? Test yourself.

Water quiz!

1. What is water made up of?
a) nitrogen b) carbon and oxygen
c) carbon and monoxid d) oxygen and hydrogen
2. Water is colourless. True or false?
a) true b) false
3. What percentage of the world's water supply is fresh?
a) 2.5 % b) 7.5 % c) 10.5 %
4. Which is the driest place in the world?
a) the Sahara desert b) the Gobi desert c) the Atacama desert
5. How much of the water on earth is available for human use?
a) 31 % b) 13 % c) 0.3 % d) 1.3 %
6. How much water does the human body contain?
a) 20 % b) 40 % c) 55 % d) 80 %

7. How long could you survive without water?
a) three hours b) three days c) three weeks
8. How many people worldwide don't have access to clean drinking water?
a) 500 million b) 100 million c) 1000 million
9. How much water do you waste by leaving the tap on while you brush your teeth?
a) 1 litre b) 5 litres c) 3 litres
10. How many litres of water must an adult person drink per day?
a) 1 to 2 b) 2 to 3 c) 3 to 4 d) 4 to 5

Ex.1.2. Match the words with their definitions.

- | | |
|------------------|---|
| 1) ice cap | a) a particular type of matter |
| 2) essential | b) gas in the form of steam, smoke or other substances spread about or hanging in the air |
| 3) substance | c) a layer of rock or soil that can hold or transmit water |
| 4) vapor | d) a mass of ice, formed by snow on mountains, moving slowly down a valley |
| 5) transpiration | e) the amount of rain, snow, etc. that falls in an area |
| 6) a solvent | f) a permanent covering of ice, especially around the North and South Poles |
| 7) aquifer | g) the process by which water is converted from its liquid form to its vapor form and thus transferred from land and water masses to the atmosphere |
| 8) glacier | h) the process where water contained in liquid form in plants is converted to vapor and released to the atmosphere |
| 9) precipitation | i) a liquid, that can dissolve another substance |
| 10) evaporation | j) extremely important and necessary |

Ex.1.3. Read the text and do the tasks below.

Water

Water is a common chemical substance that is essential for the survival of all known forms of life. In typical usage, water refers only to its liquid form or state, but the substance also has a solid state, ice, and a gaseous state, water vapor or steam; it is one of the very few substances to be found naturally in all three states on earth.

Water takes many different forms on Earth: water vapor and clouds in the sky: Seawater and rarely icebergs in the ocean: glaciers and rivers in the mountains: and the liquid in aquifers in the ground.

Water covers 71 % of the Earth's surface. On Earth, it is found mostly in oceans and other large water bodies, with 1.6 % of water below ground in aquifers and 0.001 % in the air as vapor, clouds (formed of solid and liquid water particles suspended in air), and precipitation.

Saltwater oceans hold 97 % of surface water, glaciers and polar ice caps – 2.4 %, and other land surface water such as rivers, lakes and ponds – 0.6 %. A very small amount of the Earth's water is contained within biological bodies and manufactured products. Other water is trapped in ice caps, glaciers, aquifers, or in lakes, sometimes providing fresh water for life on land.

Water moves continually through a cycle of evaporation or transpiration (evapotranspiration), precipitation, and runoff, usually reaching the sea.

Clean, fresh drinking water is essential to human and other life. Access to safe drinking water has improved steadily and substantially over the last decades in almost every part of the world. However, some observers have estimated that by 2025 more than half of the world population will be facing water-based vulnerability, a situation which has been called a water crisis by the United Nations. Water plays an important role in the world economy, as it functions as a solvent for a wide variety of chemical substances and facilitates industrial cooling and transportation. Approximately 70 percent of fresh water is consumed by agriculture.

Did you know that...?

1. A healthy person can drink about three gallons (48 cups) of water per day.
2. The total amount of water on the earth is about 326 million cubic miles of water.
3. Ninety-seven percent of the earth's water is saltwater in oceans and seas. Of the 3 % that is freshwater, only 1 % is available for drinking – the remaining 2 % is frozen in the polar ice caps.
4. Water freezes at 32 degrees Fahrenheit, 0 degrees Celsius.
5. Water boils at 212 degrees Fahrenheit, 100 degrees Celsius.
6. About 74 % of home water usage is in the bathroom, about 21 % is for laundry and cleaning, and about 5 % is in the kitchen.

7. A person takes in about 16,000 gallons of water in his or her lifetime on the average.

8. A water molecule stays in the ocean for 98 years, in ice for 20 months, in lakes and rivers for 2 weeks, and in the atmosphere for less than 7 days.

9. Where does the water go? About 70% evaporates into the air, 3.12% is used for industry, 2.46% is used for irrigation, 0.42% is used in cities, and the last 24% is unused precipitation that returned to the sea.

10. One liter of water weighs 1 kg., and 1 gallon of water is equal to 3.7854118 liters; therefore, 1 gallon weighs 3.7854118 kg, which is 8.345404487293294 pounds.

Ex.1.4. What these figures from the text refer to?

71 %; 1.6 %; 0.001 %; 2025; 97 %; 70 %.

Ex.1.5. What adjectives are used in the text to describe water?

Ex.1.6. Make your own sentences using the following words and expressions from the text.

A gaseous state, water-based, vulnerability, precipitation, trapped, three states, essential, surface, world economy, chemical substances.

Ex.1.7. Match the idioms with their meanings and find Ukrainian equivalents:

- | | |
|---------------------------------|--|
| 1) to be in deep waters | a) a quantity too small to make any improvement |
| 2) a drop in the ocean | b) being unfamiliar with the surroundings |
| 3) like a fish out of water | c) be in trouble |
| 4) to be soaked to the skin | d) a lot of fuss about something unimportant |
| 5) a storm in a teacup | e) be completely soaked |
| 6) water under the bridge | f) without any effect |
| 7) like water off a duck's back | g) event that has already occurred and cannot be altered |
| 8) the tip of the iceberg | h) small but evident part of a much larger problem |
| 9) it's raining cats and dogs | i) it's raining very hard |

Ex.1.8. Fill in the gaps with some idioms from Ex. 1.7.

1. When the children came back home after the storm, they were
2. In her new school, she felt like
3. Come on, forget about that dispute! It's
4. Two new hospitals are being built, but this is just ... for such a big city.
5. Having lost his passport, he is now
6. Take an umbrella! It's

Ex.1.9. Read the text and choose the best title for it:

- 1) Water Everywhere
- 2) Plenty of Water
- 3) Water: a Precious Resource

Without water, life could not exist. Because water is essential to all life, we must manage it intelligently and carefully. We think there is plenty of it – oceans, lakes, rivers, and streams. It may even seem as though we have more water than we need. Unfortunately, the reality is not the case.

Water is essential to people in more ways than you might think. We need water for cooking, bathing, transportation and recreation. We eat aquatic plants and animals. We use water to irrigate our crops, and to manufacture products.

Most of the water on Earth (97 percent) is salt water stored in oceans. Only about three percent of the Earth's water is fresh water, and most of that is locked up in ice caps and glaciers.

There will never be more water on Earth than there is now. The same water is simply recycled over and over again. Just think – the water we are using now is the very same water the dinosaurs used to drink millions of years ago.

Ex.1.10. Choose the best option to complete the sentences.

1. Water is essential because ...
 - a) we manage it intelligently.
 - b) here is plenty of it.
 - c) it is the source of all living beings.

2. Water ...
 - a) is needed only to humans.
 - b) is needed to all living beings.
 - c) is needed only to plants and animals.

Ex.1.11. Decide whether the following statements are true or false.

1. Water is unnecessary for transportation and recreation.
2. We use water for a lot of purposes.
3. Most of the water on Earth is drinkable.
4. Oceans consist of salt water.
5. The quantity of water on Earth is the same as it was in the past and will certainly be the same in the future.

Ex.1.12. Answer the following questions according to the text above.

1. Is there really plenty of water on Earth?
2. Where can most of the fresh water on Earth be found?

Ex.1.13. Find in the text words or expressions to the following definitions.

- 1) very important and necessary
- 2) that lives and grows in the water
- 3) kept in a closed and/or limited place

Ex.1.14. Rewrite the following sentence starting as shown.

We use water to irrigate the crops. – Water ...

Without water, life could not exist. – If ...

Ex.1.15. Write a composition on the following situation.

‘Some people say that the environment is the air, water, and land on Earth, which can be harmed by man’s activities. They also say that water is getting scarce so we must do our best to preserve it’.

What should be done to preserve that precious and strategic resource?

(Start your composition by talking about the importance of water, then use the following points to finish your writing.)

- Build small dams to retain rain water.

- Don't throw rubbish in the rivers.
- Water is life, don't waste it.
- Don't leave the water taps in the home open.
- Repair the leaking taps and pipes.
- Water the garden when necessary.

Ex.1.16. Read the text and answer the questions below.

Water Pollution

Water pollution is the contamination of water bodies such as rivers, streams, and oceans. It poses great danger to plants and organisms that live in or drink the contaminated water. Water pollution is a major problem and is among the leading worldwide causes of death and diseases.

What is Water Pollution?

Water pollution takes place when bodies of water become contaminated from sources like waste, chemicals, and oil spillage. Water pollution is extremely harmful to humans, animals and water life. The effects can be catastrophic, depending on the kind of chemicals concentration of the pollutants. Unfortunately, many water bodies near urban areas (cities and towns) are highly polluted. This is the result of both garbage dumped by individuals and dangerous chemicals legally or illegally dumped by manufacturing industries, health centres, schools and market places.

Water pollution introduces dangerous chemical, physical or biological agents into the water that adulterates and degrades the quality of the water, thus affecting the organisms that depend on that water for survival. In many developing countries, where clean drinking water is not readily available, contaminated drinking water causes about 80 % of diseases and kills about 2 million people annually, with the majority of them being under the age of 5.

Pollution of Streams and Lakes

Streams and larger rivers are able to quickly recover from polluting events, because of their continuous flow. This continuous flow is able to continually dilute the pollutants that result from surface runoff. However, this is only effective when the flow is continuous, not reduced or diverted, and as long as they are not overloaded with

pollutants. Lakes on the contrary, are very vulnerable to pollution because of the stratified layers that they have. They undergo very little mixing that ultimately results in the accumulation and magnification of pollutants as well as a reduction in dissolved oxygen. Because of this, lakes receive large amounts of inputs of nutrients that are unable to be diluted. This is called eutrophication.

The Consequences of Water Pollution

The main problem caused by water pollution is that it kills organisms that depend on these water bodies. Dead fish, crabs, birds, dolphins, and many other animals often wind up on beaches, poisoned by pollutants in their habitat. Water pollution not only destroys the aquatic flora and fauna but it also disrupts the natural food chain. Pollutants such as lead and cadmium are eaten by tiny animals, later these animals are consumed by fish and shellfish, and the food chain continues to be disrupted at all higher levels. Eventually, humans are affected by this process as well. People can get diseases such as hepatitis by eating seafood that has been poisoned.

How does Contaminated Water Affect Humans?

Because of the dearth of clean drinking water in many developing countries, there are many diseases that are commonly transmitted to human. These diseases are transmitted through bacteria, viruses, parasitic protozoa and parasitic worms. These are all considered pathogens, disease-causing agents. Left untreated, parasitic worms can cause schistosomiasis. This can result in abdominal pains, skin rashes, chronic fatigue and anaemia.

Diseases that can be caused by bacteria in contaminated drinking water include typhoid fever, cholera, bacterial dysentery and enteritis. Typhoid fever can cause diarrhoea, severe vomiting, an enlarged spleen, and inflamed intestines and is often fatal if left untreated. Cholera also results in diarrhoea, severe vomiting, and dehydration and is fatal if left untreated. Bacterial dysentery results in much more severe diarrhoea, however it is rarely fatal except in young children. Enteritis can cause severe stomach pains, vomiting, and nausea, but it is very rarely fatal. The only viral disease, which can result from consuming contaminated water, that is infectious, is hepatitis. Hepatitis can cause permanent liver damage and an enlarged liver but is rarely fatal.

In conclusion, the dangers of water pollution associated with lakes, streams, rivers, and other contaminated bodies of water, ultimately affect our drinking water, causing several life-threatening diseases that we need to be aware of.

1. What is water pollution?
2. When does water pollution take place?
3. Why are many water bodies near urban areas highly polluted?
4. How does continuous flow help rivers and streams recover from polluting events?
5. Why are lakes very vulnerable to pollution?
6. What is the process eutrophication?
7. What are the consequences of water pollution?
8. What diseases can be caused by bacteria in contaminated drinking water?
9. What are the symptoms of the most common diseases?

Ex.1.17. Match the words with their definitions.

- | | |
|-----------------|--|
| 1) pollutants | a) deposit or dispose of (rubbish, waste, or unwanted material), typically in a careless or hurried way |
| 2) urban | b) loss or deficiency of water in body tissues |
| 3) food chain | c) substances that pollute the environment, especially gases from vehicles and poisonous chemicals produced as waste by industrial processes |
| 4) dump | d) make (a liquid) thinner or weaker by adding water or another solvent to it |
| 5) disease | e) a substance that provides nourishment essential for the maintenance of life and for growth |
| 6) accumulation | f) a series of organisms each dependent on the next as a source of food |
| 7) dehydration | g) in, relating to, or characteristic of a town or city |
| 8) degrade | h) a large number of things which have been collected together or acquired over a period of time |
| 9) nutrient | i) an illness which affects people, animals, or plants, for example one which is caused by bacteria or infection |
| 10) dilute | j) lower the quality of |

Ex.1.18. Complete the sentences using words from the text above.

1. Water pollution is among the leading worldwide causes of ... and diseases.
2. Water pollution takes place when water becomes contaminated from sources like waste, chemicals, and oil
3. Streams and larger rivers are able to quickly recover from polluting events because of their continuous
4. Lakes are very ... to pollution because of the stratified layers that they have.
5. Water poses great ... to plants and organisms that live in or drink the contaminated water.
6. Water pollutions adulterates and ... the quality of the water.
7. Diseases caused by bacteria in contaminated drinking water include fever, ... , bacterial dysentery and enteritis.
8. Water bodies near ... areas are highly polluted.
9. In many ... countries, contaminated drinking water causes about 80 % of diseases.
10. The main problem caused by water pollution is that it kills ... that depend on these water bodies.
11. Water pollution not only destroys the aquatic flora and ... but it also disrupts the natural food chain.
12. The effects of water pollution can be catastrophic, depending on the kind of ... concentration of the pollutants.

Ex.1.19. Complete the text with the words from the box.

a) harmful	b) plants	c) cooling	d) slick	e) fumes
f) oil	g) soil	h) pesticides	i) dump	j) planet

River Pollution

Rivers are very important to our 1) They provide us with food, water, transport routes and are also used as an energy source to power watermills and hydroelectric 2) The water in rivers provides the home for fish, plants and animals.

There are many different causes of water pollution. Farmers put 3) ... and fertilizers on their crops to help them grow better.

When rain falls, it washes these pesticides and fertilizers through the 4) ... and they end up in the rivers. These 5) ... substances encourage algae to grow and turn the water green, leading to pollution.

Acid rain is another cause of water pollution. 6) ... that contain nitrogen oxides are produced from vehicle exhausts. Power stations that burn coal produce sulphur dioxide. When these two substances mix with water in the air, they turn into acid rain. Acid rain damages trees and buildings and also kills wildlife in rivers.

Millions of fish and sea birds are killed when ships leak 7) ... into the seas and oceans, creating a water 8) ... on the surface. This is called accidental pollution. People also pollute rivers by pouring things like paint and used car oil into drains.

In many parts of the world people 9) ... toxic (poisonous) chemicals and other dangerous waste products into rivers and seas. These chemicals are often difficult to treat. Factories often use water for 10) ... processes. Warm water is then discharged back into the rivers raising the temperature of the water and lowering the level of dissolved oxygen.

Over 70 % of the world is covered with water, but most of this water is salty and not suitable for drinking. Over 1 billion people do not have access to clean drinking water.

Ex.1.20. Decide whether the statements are true or false according to the text above.

1. Rivers are very important in producing electricity.
2. Farmers unintentionally make algae in the rivers grow and turn the water green.
3. Acid rain is a mixture of pesticides and fertilizers.
4. Paint and used car oil poured into drains never get into rivers.
5. It's hard to extract toxic chemicals out of water.
6. Factories warm up water in rivers to increase the level of oxygen in them.
7. Over 70 % of the water on earth is salty and not suitable for drinking.
8. Over 1 billion people in the world don't drink pure water every day.

Ex.1.21. Match the verbs from column A with the expressions in column B.

A	B
to provide	to grow
to help	nitrogen oxides
to end up	the temperature
to encourage	the level of oxygen
to contain	with food, water, transport routes
to damage	into rivers and seas
to dump	in the rivers
to raise	to clean drinking water
to lower	trees and buildings
to have access	grow better

Ex.1.22. Complete the text with the words from the box.

cancer, deaths, diseases, income, intertwined, lowest, pollution, poorer, premature, rights, Somalia, water

Will Pollution Cause Human Extinction?

One in six deaths worldwide is caused by 1) This is over 16 percent of all global deaths. Most of these 2) ... were caused by non-infectious 3) ... caused by pollution. These include heart disease, lung 4) ... and stroke. The study was published in the medical journal 'The Lancet'. Researchers said most pollution-related deaths occurred in 5) ... countries. About 92 percent of these deaths were in low 6) ... nations, especially countries where there is a lot of economic development, such as India and China. Bangladesh and 7) ... were the worst affected countries, while Brunei and Sweden had the 8) ... numbers of pollution-related deaths.

Study co-author Karti Sandilya states: 'Pollution, poverty, poor health, and social injustice are deeply 9) ..'. He adds: 'Pollution threatens fundamental human 10) ..., such as the right to life, health, wellbeing, and safe work'. Sandilya claims that air pollution is the biggest cause of death. Air pollution leads to 6.5 million 11) ... deaths per year. The second biggest killer is 12) ... pollution, which causes 1.8 million deaths on a yearly basis.

Ex.1.23. Read the text and answer the questions below.

How Real is the Water Crisis?

Most apocalyptic warnings focus on oil shortages, but there's an even more frightening and immediate crisis looming on the horizon: water. An estimated one billion people – that's one out of every seven people – don't have daily access to safe drinking water, according to One Drop, an international water-rights advocacy group. An additional 2.5 billion people lack basic sanitation, and increased industrialization in developing countries like China, India, Brazil and in sub-Saharan Africa has resulted in severe pollution of once-viable sources of fresh drinking water.

This water crisis is causing serious problems on every inhabited continent, in rural areas and major cities alike. Bolivia, which once produced nearly all of its own food, now has to import much of its food supply because of a combination of drought, floods and government policies. Texas, which is withering under its worst drought since record-keeping began over 100 years ago, is expected to see no relief in the foreseeable future. The idea that desert cities like Las Vegas, Tucson and Phoenix may become uninhabitable is no longer a far-fetched vision from a science-fiction novel.

Moreover, a 2011 report from Oxfam estimates that the average cost of food staples will rise as much as 180 % by the year 2030, due in large part to water shortages. The potential for an international food crisis has caused the G20 nations to examine measures that will prevent famine, food riots and other catastrophes.

There's also the problem of water quality. Roughly two million people die each year from diseases caused by contaminated drinking water, and that number is likely to increase as more industrialization dumps more pollution into the water supplies of more crowded cities.

Though no one can say with absolute certainty that the current spate of droughts and floods are the direct result of climate change, there's ample evidence that it is. Increased average temperatures are already evident around the world, and those higher temperatures result in more evaporation of existing water supplies. And as the global population continues to soar past seven billion people, according to the Business Insider, scarcity of water and food will exacerbate the shortages that exist today.

1. How widespread is the water crisis?
2. What could its effects be on the world's food supply?
3. Is the lack of water the only problem? Justify.
4. What can you, as an ordinary citizen, do about the water crisis?

Give 2 or 3 examples.

Ex.1.24. Decide whether the statements are true or false.

1. We seem to be more worried about the water crisis than about our oil supplies.
2. Only 20 % of the people in the world are somewhat affected by the water crisis.
3. The world water crisis has already affected parts of the United States.
4. This water crisis is definitely not related to global warming.
5. A growing population will put more strain on existing water and food supplies.

Ex.1.25. Find in the text equivalents to the following words.

Scarcity, contamination, lack of rainfall, not fit/suitable to live in, to increase, extreme hunger, proof/support, to make worse.

Ex.1.26. Change the verbs in brackets to express a future meaning.

1. By the time we get there, Greenpeace (start) their protest.
2. Governments are likely (change) their environmental policies in the near future.
3. Please wait here until someone from the campaign (come) back.
4. In the next century, most people (probably/ live) in big cities.
5. 'Why are you packing your bags? Didn't you hear about the oil spill in the Gulf of Mexico?' – 'I (help) with the clean-up of the beaches in Florida'.

Ex.1.27. Put the verbs in brackets in appropriate form to complete the conditional sentences.

1. If he (not be) so lazy, he would separate his waste.
2. If we aren't careful, Earth (not / survive) much longer.
3. The air wouldn't be so polluted if we (avoid) the use of fossil fuels as much as possible.
4. If he'd separated his waste, I (take) the glass to the bottle bank.
5. If you want to help the planet, (not/waste) so much water.

Ex.1.28. Rephrase the following as indicated.

1. They didn't arrive on time and so missed the demonstration.
But if

2. If the city doesn't take action now, factories will continue to dump their waste material into rivers. Unless

3. We still need a lot of resources because we don't recycle enough.
But if ...

Ex.1.29. Put the words in brackets in the right tense or form.

SAVE PIXIE'S LAKE

Pixie's lake used to be a lovely place. I 1)... (*go*) there every summer when I was young.

However, things 2)... (*change*) over the years and today it's closed to the public. That's why I became a volunteer member of SAVE PIXIE'S LAKE. It's an 3)... (*organize*) which is trying to solve the problem of pollution in the area. As volunteers, one of our 4)... (*responsible*) is to collect rubbish from the lake and the nearby area. We take most of this rubbish for recycling. We 5)... (*do*) a lot of work so far and we can already see a big 6)... (*improve*). In two months we 7)... (*start*) preparations for the Opening Day. I can't 8)... (*wait*)! At the moment, I 9)... (*write*) a brochure which includes information about the animals that 10)... (*live*) in the area.

Ex.1.30. Answer the questions.

1. Why is Pixie's lake closed to the public?
2. What is SAVE PIXIE'S LAKE?
3. What are the volunteers' responsibilities?
4. Are they preparing for the opening day now?
5. Which information is being included in the brochure?

Ex.1.31. Circle the right alternative.

Recently, my husband and I have spent a week in the west of our country. We thoroughly (*enjoyed* / *entertained* / *disliked*) our stay but we were (*interested* / *concerned* / *pleased*) about the amount of litter (*leaving* / *leave* / *left*) on its beautiful beaches, although rubbish bins

were (*at / beyond / within*) easy reach. The area wasn't full of young children (*so / therefore / as*) they had all gone back to school. They were adults (*who / which / when*) had made the terrible mess. What right do they have to (*die / spoil / protect*) our beautiful country? And what message are they going to give their children about (*what / which / how*) to treat our planet?

Ex.1.32. Read the text and answer the questions below.

Oil Spills

An oil spill is the release of a liquid petroleum hydrocarbon into the environment, especially the marine ecosystem, due to human activity, and is a form of pollution. The term is usually given to marine oil spills, where oil is released into the ocean or coastal waters, but spills may also occur on land. Oil spills may be due to releases of crude oil from tankers, offshore platforms, drilling rigs and wells, as well as spills of refined petroleum products (such as gasoline, diesel) and their by-products, heavier fuels used by large ships such as bunker fuel, or the spill of any oily refuse or waste oil.

Oil spills penetrate into the structure of the plumage of birds and the fur of mammals, reducing its insulating ability, and making them more vulnerable to temperature fluctuations and much less buoyant in the water. Cleanup and recovery from an oil spill is difficult and depends upon many factors, including the type of oil spilled, the temperature of the water (affecting evaporation and biodegradation), and the types of shorelines and beaches involved. Spills may take weeks, months or even years to clean up.

Oil spills can have disastrous consequences for society: economically, environmentally, and socially. As a result, oil spill accidents have initiated intense media attention and political uproar, bringing many together in a political struggle concerning government response to oil spills and what actions can best prevent them from happening.

Oil spills at sea are generally much more damaging than those on land, since they can spread for hundreds of nautical miles in a thin oil slick which can cover beaches with a thin coating of oil. These can kill

seabirds, mammals, shellfish and other organisms they coat. Oil spills on land are more readily containable if a makeshift earth dam can be rapidly bulldozed around the spill site before most of the oil escapes, and land animals can avoid the oil more easily.

An oil spill represents an immediate fire hazard. The Kuwaiti oil fires produced air pollution that caused respiratory distress. The *Deepwater Horizon* explosion killed eleven oil rig workers. The fire resulting from the Lac-Mégantic derailment killed 47 and destroyed half of the town's centre.

Spilled oil can also contaminate drinking water supplies. For example, in 2013 two different oil spills contaminated water supplies for 300,000 in Miri, Malaysia; 80,000 people in Coca, Ecuador. In 2000, springs were contaminated by an oil spill in Clark County, Kentucky.

Contamination can have an economic impact on tourism and marine resource extraction industries. For example, the *Deepwater Horizon* oil spill impacted beach tourism and fishing along the Gulf Coast, and the responsible parties were required to compensate economic victims.

1. What is an oil spill?
2. Where may spills occur?
3. What are the consequences of oil spills for birds and mammals?
4. What does cleanup from an oil spill depend on?
5. Why are oil spills at sea much more damaging than those on land?
6. Can oil spills contaminate drinking water supplies?

Ex.1.33. Decide whether the statements are true or false according to the text above.

1. Oil spill is a natural process.
2. There are a lot of kinds of liquid petroleum hydrocarbon that can pollute the environment.
3. Spilled oil can change some natural abilities of birds and mammals.
4. It's hard and complicated to remove oil spill and usually takes long time.
5. Mass media encourage governments to take responsibility for oil spills.

6. Land oil spills are more hazardous as they spread too fast.
7. Oil spills eventually may pollute the air.
8. Thousands of people may suffer from lack of drinking water due to oil spills.
9. Usually oil spills don't change plans of tourists to visit the places.

Ex.1.34. Match the words with their definitions:

- | | |
|-----------------|--|
| 1) crude oil | a) a violent and destructive shattering or blowing apart of something, as is caused by a bomb |
| 2) refine | b) a structure with equipment for drilling an oil well |
| 3) hazard | c) water which is collected and passed through pipes to buildings for people to use |
| 4) explosion | d) oil in its natural state before it has been processed or refined |
| 5) oil rig | e) a person harmed, injured, or killed as a result of a crime, accident, or other event or action |
| 6) water supply | f) go into or through (something), especially with force or effort |
| 7) impact | g) remove impurities or unwanted elements from (a substance), typically as part of an industrial process |
| 8) victim | h) a danger or risk |
| 9) penetrate | i) a layer of oil that is floating on the sea or on a lake because it has accidentally come out of a ship or container |
| 10) oil slick | j) have a strong effect on someone or something |

Ex.1.35. Match the words from column A with ones in column B to complete word combinations from the box:

A	B
coastal	spills
offshore	ability
drilling	consequences
oil	waters
plumage	bulldozed
insulating	rigs and wells

A	B
temperature	platforms
buoyant	fluctuations
disastrous	of birds
political	distress
rapidly	impact
fire	in the water
respiratory	supplies
drinking water	hazard
economic	uproar

Ex.1.36. Read the text and decide whether the statements below are true or false.

Accident under Bahamas Flag

“The Prestige” was a Greek-operated, single-hulled tanker flying a Bahamas flag, had a Liberian owner, and had been chartered by a Swiss-based Russian oil company.

On November 13, 2002, one of the ship’s tanks burst during a storm off the Spanish coast. The captain called for help from Spanish rescue workers, with the expectation that the ship would be brought into harbour. However, pressure from local authorities forced the captain to steer the embattled ship away from the coast and head northwest. After pressure from the French government, the vessel was once again forced to change its course and head southwards into Portuguese waters in order to avoid endangering France’s southern coast. Fearing for its own shore, the Portuguese authorities promptly ordered its navy to intercept the vessel and prevent it from approaching further.

With the French, Spanish and Portuguese governments refusing to allow the ship to dock in their ports, the integrity of the oil tanker was deteriorating fast and soon the storm took its toll when it was reported that a section of the hull had broken off, allowing huge amounts of oil to flood out.

At 8 a.m. on November 19, in what became Spain’s worst environmental disaster, the ship split into two parts and sank 150 miles off the Galician coast. The Greek captain of “The Prestige” was taken into custody, accused of not cooperating with salvage crews and of harming the environment.

The ship was carrying fuel oil, which is heavier than unrefined crude oil and more difficult to clean up. 5,000 tons of fuel oil were spilled in the incident.

After the sinking, the ship continued leaking about 125 tons of oil a day, which polluted the sea bed and contaminated the coastline, especially along the territory of Galicia. Thousands of kilometres of coastline and more than a thousand beaches on the Spanish and French coast were heavily polluted. The affected area is not only a very important ecological region, supporting coral reefs and many species of sharks and birds, but it also supports the crucial fishing industry. The heavy coastal pollution forced the region's government to suspend fishing for six months, leaving the fishing industry completely devastated.

Experts predict that marine life will suffer pollution from "The Prestige" for at least 10 years due to the type of oil spilt, which contains light fractions of polyaromatic-hydrocarbons. These toxic chemicals poison plankton, fish eggs and crustaceans, leading to carcinogenic effects in fish and other animals higher in the food chain.

The massive environmental and financial costs of the spill have resulted in an enquiry into how a structurally deficient ship was able to travel out to sea. Investigators have since learned that prior to the spill "The Prestige" had left St. Petersburg, Russia, without being properly inspected. A previous captain who had complained about numerous structural deficiencies within the ship was rebuffed, and later resigned in protest.

What can be done about catastrophic oil spills? Most important are measures to prevent them in the first place. Under international law, all new tankers must be built with a double hull, so that if the outer hull is breached, the inner hull will contain the oil.

1. The sinking of the Prestige was so sudden that there was no time to send a SOS.
2. Oil started to leak from the vessel about a week before it sank.
3. The kind of oil the ship was carrying was one of the worst.
4. The oil leakage stopped after the ship sank.
5. Local fishermen were able to start fishing soon after the clean-ups.

Ex.1.37. Go through the text and find synonyms for these words and word expressions.

With the hope of, to manoeuvre, keep away from, immediately, ship, weakening.

Ex.1.38. Answer the following questions with complete answers according to the text above.

1. Do you think it was easy to determine the responsibility for the Prestige spill? Why (not)?
2. Why wasn't the ship allowed to dock in any port?
3. "The Prestige" oil spill had both environmental and financial costs. Explain.
4. What measures have governments of several countries taken in order to prevent accidents like this?

Ex.1.39. Read the dialogue and choose the best option to complete the sentences below.

Surfers against Sewage

Janet: Hi, are you new around here?

Phil: Yeah. I've just joined the surfing Club. I'm Phil.

Janet: I'm Janet. By the way, it's a great Club – I've been a member for several years. And the beach here is fantastic – have you noticed how clean it is?

Phil: Well, yeah. I guess so.

Janet: Well, this beach has got the cleanest water in the whole area. And it's all thanks to SAS which I'm a member of.

Phil: SAS? What's that?

Janet: It stands for Surfers Against Sewage. It's an environmental organisation that fights for cleaner and safer water for swimming and water sports. Would you like to join?

Phil: What's the point? The water's already clean.

Janet: Oh, but it wasn't always like that. A few years ago, the water here was always polluted because of sewage. It was really disgusting, but for some reason, it was still a popular beach. There were always lots of families and tourists in the summer and surfers all year round.

Phil: I can't believe that people weren't bothered by the sewage.

Janet: Nobody complained, but everyone knew something was wrong. I mean, we all kept getting ill – ear infections, stomach problems, stuff like that.

Phil: So why didn't anyone do anything about it?

Janet: Well, at first we didn't know what it was from. But then one of the guys noticed that if we didn't surf for a while, we didn't get ill. But the minute we went back to the sea, it was back to the doctor.

Phil: So you knew your health problems were connected to the water?

Janet: Uh-huh. We went and complained to the local water company and health department – but they just ignored us.

Phil: So what did you do then?

Janet: Well, we heard about some surfers in Cornwall – they were also working to clean up the beaches. They were using some wild ideas and we decided to try them. You see those gas masks on the wan?

Phil: Yeah. I thought that was a strange way to decorate a surfers' club. What are they for?

Janet: Those are the symbols of our fight. We wore them with our wet suits at our first demonstration. Now it's a tradition to wear gas masks and wet suits at every demonstration.

Phil: You guys are crazy! To be too embarrassed to go out in public in a wet suit and gas mask.

Janet: But sometimes that's the only way to get media attention. A lot of people saw us on TV and began supporting our demands, finally, the city and the water company actually began cleaning up the beaches. Using the media helped us succeed more than anything else.

Phil: SAS sounds great, but... it's not for me. I'm ... you know. I just want to surf, not change the world. Anyway, it won't make a difference if I don't join. The beach here is clean – that's what's important to me.

Janet: Well, our beach is clean, but there are surfing clubs on other beaches that still need help!

Phil: OK, you know what? How do I sign up?

Janet: Here fill in this form and then sign my name at the bottom.

Phil: Why do you have to sign?

Janet: Oh – well... I didn't mention this before, but there's a competition to see who signs up the most new members. You're my tenth new member – now I'm sure I'm going to win the prize!

to be affected in a severe way. Harvests were no longer fit for consumption that ... (*lead*) to financial problems for farmers in the area. Wastewater ... (*poison*) a lot of fish and aquatic organisms in the river and as a result fish-eating birds ... (*die*) as well. It ... (*take*) one whole month for the river water to recover to its original state.

After the wastewater flow ... (*enter*) the river a major cleanup operation ... (*start*), including the installation of walls preventing further spreading of contaminants and the removal of polluted sludge. Finally the pH levels of the soil were restored by a process called liming.

UNIT 2. LAND POLLUTION

Key words

destruction – руйнування	solid wastes – тверді відходи
mining – видобуток корисних копалин	garbage – сміття
landfill – сміттєзвалище	trash – сміття
to seep – просочуватися	to dispose – утилізувати
fertilizer – добриво	to get rid of – позбутися від
exposure – вплив зовнішніх факторів	to attract – приваблювати
to conserve – зберігати	to release – випускати
to erode – роз’їдати	mercury – ртуть
composition – склад	to inhale – вдихати
to appear – з’являтися	leachate – продукт вилугування
reduction – зменшення	potent – сильний
to achieve – досягати	flammable – легкозаймистий
litter – сміття	to dissolve – розчиняти
endangered species – вимираючий вид	huge – великий
to absorb – поглинати	to cause – викликати
density – щільність	threat – загроза
acid – кислота	

Ex.2.1. Read the text and answer the questions.

1. What is the basic definition of land pollution?
2. What are the causes of land pollution?
3. What chemicals are used in farming process to protect crops?
4. Why has industrialization become one of the main contributors to the land pollution?
5. What are the negative consequences of land pollution for humans and animals?

What is Land Pollution?

The basic definition of land pollution is the destruction and contamination of the land through the direct and indirect actions of humans. The pollution results in changes to the land, such as soil erosion. Some of the changes are irreversible, while others are not.

The effects of land pollution do not necessarily appear overnight. It is the result of long-term destruction from human activities.

For instance, the damage from chemicals from an oil spill can take months or even years to be fully realized.

There are several known causes of land pollution.

1. Deforestation and soil erosion. When forests are cleared for development and to meet the demand for wood supply, the soil is loosened in the process. Without protection of the trees, the land becomes barren over time and starts to erode.

2. Agricultural chemicals. Part of the farming process often involves the use of harmful pesticides and insecticides to protect crops. However, the chemicals can cause the land to become barren. The once-fertile soil is then more susceptible to environmental elements, such as the wind.

3. Industrialization. The Industrial Revolution may have resulted in significant positive changes to the economy and society, but it also led to significant pollution of the land. Through unsafe disposal practices for chemicals used in manufacturing, poor regulation, and the overwhelming number of industries and factories that are polluting the land daily, industrialization has become one of the main contributors to the pollution problem.

4. Mining. The mining process can lead to the creation of large open spaces beneath the surface of the earth. This can result in the land caving in, which compromises the integrity of the land. Mining also results in harmful chemicals, such as uranium, being disturbed and released into the environment.

5. Landfills. The garbage found at landfills is filled with toxins that eventually seep into the earth. During rains, the toxins are washed into other areas and the pollution is spread. As the population grows, the amount of garbage filling landfills also grows.

6. Human sewage. Untreated human waste can produce toxic gases that can seep into the ground. As with air pollution, the soil quality is negatively impacted, and land nearby can be contaminated. In addition to this, the probability of human illnesses occurring increases.

The contamination of the land has far-reaching consequences that can be catastrophic for water, soil, and animals.

1. Ground water poisoning. Depending on the soil and whether the chemicals were improperly disposed of on the land, the chemicals

could end up in the ground water. The process is known as leaching. It can occur on farms, industrial sites, and landfills.

2. Loss of topsoil. As chemical fertilizers and pesticides are used to maintain crops, the topsoil's composition becomes altered. The soil becomes more susceptible to harmful fungus species and begins to erode. It is important to conserve our soil to maximize land productivity.

3. Shifting habitat. As deforestation and soil erosion progress, animals are forced to move to find shelter and food. For some animals, the change is too traumatic, and this has led to some dying. As a result, some species are at a greater risk of extinction.

4. Increased risk of wildfires. The dry conditions created by pollutants in the soil help to create the perfect environment for wildfires. The fires can grow quickly because of the dry conditions and widening area of polluted land.

The impact of land pollution is not limited just to the earth and animals. Humans can also experience negative consequences that can influence quality of life and health.

Some of the potential consequences include birth defects, the development of breathing disorders, skin diseases, and cancer. Most of these develop after exposure to waste from water poisoning and soil contamination.

Ex.2.2. Match the words with their definitions.

- | | |
|----------------|--|
| 1) destruction | a) a place to dispose waste material by burying it and covering it over with soil |
| 2) mining | b) flow or leak slowly through porous material or small holes |
| 3) landfill | c) the nature of something's ingredients or constituents; the way in which a whole or mixture is made up |
| 4) seep | d) the state of having no protection from something harmful |
| 5) fertilizer | e) the action or process of causing so much damage to something that it no longer exists or cannot be repaired |
| 6) exposure | f) the natural home or environment of an animal, plant, or other organism |

- | | |
|-----------------|---|
| 7) conserve | g) the process or industry of obtaining coal or other minerals from a mine |
| 8) erode | h) protect (something of environmental or cultural importance) from harm or destruction |
| 9) habitat | i) gradually wear away (soil, rock, or land) |
| 10) composition | j) a chemical or natural substance added to soil or land to increase its fertility |

Ex.2.3. Match the causes of land pollution in column A with their effects in column B.

A	B
deforestation	land caving in
agricultural chemicals	seeping of toxins into the land
industrialization	loosening of the soil, erosion
mining	seeping of toxic gases into the land, human diseases
landfills	pollution of the land with industrial wastes
human sewage	barren soil

Ex.2.4. Match the halves of the sentences to complete the sentences from the text above.

- | | |
|---|--|
| 1) Some of the changes caused by land pollution ... | a) ... help to create the perfect environment for wildfires. |
| 2) If the chemicals were improperly disposed of on the land, ... | b) ... animals are forced to move to find shelter and food. |
| 3) As chemical fertilizers and pesticides are used to maintain crops, ... | c) ... that can influence quality of life and health. |
| 4) As deforestation and soil erosion progress, | d) ... the topsoil's composition becomes altered. |
| 5) The dry conditions created by pollutants in the soil ... | e) ... are irreversible, while others are not. |
| 6) Humans can also experience negative consequences ... | f) ... they could end up in the ground water. |

Ex.2.5. Find in the text English equivalents to the following Ukrainian words and word combinations.

Забруднення, ерозія ґрунту, незворотний, тривале руйнування, вирубка лісів, безплідний, шкідливі пестициди, для захисту культур, більш сприйнятливий, небезпечний, погане регулювання, переважна кількість, щоденно, під поверхнею, цілісність землі, звалище, зрештою, стічні води, просочуватися у землю, наслідки, підземні води, вилуговування, добрива, змінений, грибок, місце проживання, травматичний, вимирання, лісові пожежі, порушення дихання.

Ex.2.6. Read the text and decide whether the statements below are true or false.

What is a Pesticide?

A pesticide is a chemical used to prevent, destroy, or repel pests. Pests can be insects, mice and other animals, weeds, fungi, or microorganisms such as bacteria and viruses. Some examples of pests are termites causing damage to homes, dandelions in the lawn, and fleas on the dogs and cats. Pesticides also are used to kill organisms that can cause diseases.

Most pesticides contain chemicals that can be harmful to people, animals, or the environment. Here are some examples of pesticide products we use at homes: mosquito spray's; rat poisons; flea and tick sprays, powders, and pet collars. The following common products are considered pesticides as well: cleaners used to disinfect the kitchen floor; cleaning products used to remove the mildew on bathroom tiles; household plant sprays; lawn and garden products to kill insects and weeds; some swimming pool chemicals.

1. Pests can only be animals.
2. Pesticides are also used to protect your health.
3. All pesticides can cause some harm to people, animals and the environment.
4. Some cleaners, plant sprays and swimming pool chemicals are also considered pesticides.

Ex.2.7. Match the words from the text above with their definitions:

- | | |
|------------|--|
| 1) collar | a) food or other lure (sort of trap) placed on a hook or in a trap and used in the taking of fish, birds, or other animals |
| 2) powders | b) a substance that causes injury, illness, or death, especially by chemical means |
| 3) spray | c) the part of a garment that encircles the neck |
| 4) poison | d) water or other liquid moving in a mass of dispersed droplets |
| 5) bait | e) a substance consisting of ground, pulverized, or otherwise finely dispersed solid particles |

Ex.2.8. Complete the text with the words from the box.

*pests, health, sprayed, helpful, flooding, use,
pesticides, bodies, washing, harmful*

Pesticides

Most fruit and vegetables are sprayed with special chemicals called 1) ... while they are growing. A pesticide is a poison that kills insects and 2) ...

Pesticides are sprayed on plants as they grow to protect the plants from being destroyed by insects, worms and diseases. In this way, pesticides are 3).... But pesticides can be 4) ... if they are swallowed. Traces of pesticides may be removed by 5) ... the fruit and vegetables.

Some people think that pesticides do more harm than good. They think that pesticides are dangerous to 6) Pesticides can get into other foods besides those which have been 7) During heavy rains or 8) ... pesticides can be washed off plants. Pesticides in the water drain into lakes and rivers. Fish in these lakes and rivers accumulate the chemicals in their 9) Later people may eat the fish and the chemicals get to their organisms.

Pesticides are poisons. For this reason, the government regulates the 10) ... of pesticides to protect people from the effects of these chemicals.

Ex.2.9. Read a newspaper article about environmental damage to Europe's forests. Choose from the list (A–H) the sentence which best summarizes each part (1–7) of the article. There is one extra sentence which you do not need to use.

- A. More research is needed to find out the reasons for tree damage.
- B. The situation in Europe may soon get better.
- C. Environmental damage is threatening certain European industries.
- D. Planting more trees is only part of the solution.
- E. Threatened trees need European protection.
- F. Europe's trees have been harmed in a variety of ways.
- G. The forestry industry has acted more quickly than European governments.
- H. Europe should pay more attention to its own environmental problems.

Europe's Trees in Danger

1	
---	--

Forestry experts have called on the European Union to use its powers in order to protect the continent's wood-lands. This follows the publication of a recent report showing that one quarter of Europe's trees showed signs of severe damage. The experts are asking for wide-ranging action as it now seems clear that Europe's forests are reaching crisis point.

2	
---	--

The study examined trees across the whole of Europe and found that they were being damaged throughout the continent. Twenty-six per cent of Europe's trees had lost significant numbers of leaves, while more than ten per cent showed signs of discoloration.

3	
---	--

The report also put forward factors such as air pollution and climate change as causes of this environmental problem. Responding to the report, however, a European spokesman said it was too early to be certain about what was causing the widespread damage. The European Commission has now begun a more detailed 20-year study which will hopefully produce clearer answers.

4

Francis O'Sullivan, senior forestry officer at the World Wildlife Fund for Nature (WWF), pointed out: 'While Europe is quick to condemn tropical countries over their forestry policies, it has been ignoring the crisis in its own backyard. Europe now has fewer forests than any other continent except Antarctica, and has less protected woodland than any other region in the world'.

5

'Less than one per cent of our ancient forests remain', he added. 'If this is allowed to continue, the damage to our forest systems will result in a reduction in water quality and will cause a crisis in the fishing, tourist and timber industries, as well as threatening the ecological balance in Europe'.

6

Nigel Dudley, a specialist forestry adviser, says that the forestry industry has made substantial progress in organizing a program of forest management, but in his opinion European governments have not been acting quickly enough. Dudley believes that there is a need for further European action on commitments made at the Rio Earth Summit in 1992.

7

Next month the WWF will be reporting on how well governments around the world have kept their Rio summit promises. Most governments are expected to get poor reports. The situation in Europe may, however, be about to improve as the European Parliament is to begin investigating forest protection and may ask for new safeguards to protect the health of Europe's trees.

Ex.2.10. Look at the following words from the text and try to explain them.

Continent, factors, widespread, forestry, ignoring, timber, ecological balance, substantial, safeguards.

*Ex.2.11. Fill in the gaps with the correct word(s) from the list below.
Condemned, commitments, put forward, experts, reductions, discoloration,
wide-ranging, responded, backyard, woodland*

1. The residents were opposed to the construction of a nuclear power station in their (*area*)
2. To be a successful manager you need to have ... experience. (*varied*)
3. The ... on the hill is home to numerous birds and animals. (*tree covered area*)
4. When asked, Jane is always ready to ... good ideas. (*suggest*)
5. To avoid ... wash light and dark coloured clothes separately. (*spoiling the colour*)
6. The President said that he ... the practices of military regimes. (*found unacceptable*)
7. Educational ... are trying to improve the standards in schools. (*specialists*)
8. My holiday had to be cancelled because of work (*obligations*)
9. There are special ticket ... for students. (*discounts*)
10. The government ... positively to the demand for new anti-pollution laws. (*answered*)

Ex.2.12. Fill in the correct word derived from the words in brackets.

World's Wildlife in Danger

1) ... (*conserve*) are very concerned about the ever-growing number of 2) ... (*danger*) species in the world. 3) ... (*environment*) problems such as freak weather conditions, fire and acid rain are resulting in the 4) ... (*destroy*) of vast areas of woodland and forest. These areas are home to large numbers of animals and, as the land is vital to their 5) ... (*survive*), this is having 6) ... (*alarm*) effects. 7) ... (*ecology*) advocate the use of ozone-friendly products and, of course, recycling to achieve a 8) ... (*reduce*) in environmental damage. Safari parks have also been established in an attempt to give 9) ... (*protect*) to animals from big-game hunters. Numbers are slowly beginning to increase and will 10) ... (*hope*) continue to do so in the future.

Ex.2.13. For questions 1–16, read the text below and decide which word A, B, C or D best fits each space.

Saving Europe's Woodlands

Hidden in almost every European country there are ancient and untouched forests. These forests are often (1)... in wildlife and are 2)... to many endangered species. One example is a small patch of Scottish forest which 3)... a variety of coniferous trees 4)... for a wide range of birds and insects. Although many of the ancient 5)... of Europe worshipped trees, there is 6)... respect for them today. The World Wildlife Fund has decided to 7)... attention to the importance of Europe's ancient woodlands. They are asking for the remaining forests to be protected by controlling the trade in wood. 8)..., governments are being asked to regenerate forests where 9)... , and manage them in a more nature- friendly way. At present almost a third of western Europe is 10)... by trees. Unfortunately, many of these were only 11)... recently. This means they can't support such a(n) 12)... variety of plant and animal life. If we destroy the ancient forests, we will cause many species to 13)... extinct. The decline of ancient forests began thousands of years ago. Yet, with the growing awareness of the 14)... of ancient woodlands, it is hoped those remaining will be 15)... . By the year 2000 the W.W.F. hopes to have 16)... many forest reserves across Europe. It isn't too late to do something for our ancient trees.

1. A full B wealthy C prosperous D rich
2. A house B place C home D shelter
3. A contains B includes C embraces D holds
4. A capable B suitable C able D plenty
5. A humans B peoples C beings D persons
6. A small B tiny C little D few
7. A draw B bring C carry D move
8. A As well as B In addition C Too D Plus
9. A necessary B important C urgent D vital
10. A loaded B packed C full D covered

- | | | | | |
|----|------------|-------------|--------------|---------------|
| 11 | A placed | B put | C plotted | D planted |
| 12 | A deep | B wide | C excessive | D extreme |
| 13 | A come | B end | C become | D get |
| 14 | A value | B advantage | C gravity | D seriousness |
| 15 | A released | B endured | C survived | D saved |
| 16 | A done up | B set up | C brought on | D made out |

Ex.2.14. Read the text. Six sentences have been removed from it. Choose from the sentences A–G the one which fits each gap (1–6). There is one extra sentence which you do not need to use.

Welcome to the Amazon Rainforest!

Do you know how big the Amazon rainforest is? It's huge! It covers 5.5 million square kilometres. That's about ten times the size of France. It's the largest tropical rainforest in the world. Approximately 60 % of the rainforest is in Brazil, the rest being in Bolivia, Columbia, Ecuador, French Guiana, Guyana, Peru, Suriname and Venezuela.

The Amazon rainforest is home to more than a third of all the world's species of plants, birds and animals. Twenty per cent of all the birds in the world live in the rainforest. Scientists have discovered thousands of types of plant and animal that can only be found there. 1)... There are at least 2.5 million species of insect there. Imagine what would happen if they all lost their home. It couldn't happen, could it? Unfortunately, it's happening right now. Yes, the rainforest is big. But it's getting smaller. Every day. The problem is that people are cutting down the trees, mainly to make room for cows. 2)... This process of cutting down trees is called 'deforestation'.

The good news is that it is slowing down. In 2004, for example, more than 27,000 square kilometres were cut down. That's an area bigger than Wales. In 2006, because of all the campaigns to save the rainforest, it had dropped to just over 13,000 square kilometres. 3)... Scientists predict that by 2030, the rainforest will have become smaller by 40 %. It's possible that, by the end of the 21st century, the rainforest will have completely disappeared.

With deforestation, thousands of the animals, birds, fish and plants that live in the Amazon rainforest lose their home, their natural habitat.

4)... Many species have already become extinct, and many more will if deforestation continues. That will change the balance of life in the rainforest and could cause enormous problems to the region's ecosystem.

There's another problem too. Trees and plants are a vital source of oxygen. If we cut them down, we lose that oxygen. But it's worse than just that. With deforestation, the trees and plants are burnt. 5)... That then leads to the temperature here on the ground going up. This increase in the world's temperature is called 'global warming', and most scientists believe it's a very serious issue. If they stopped deforestation, it might help prevent global warming.

A number of environmental organisations are campaigning to get the deforestation stopped. 6)... The deforestation has decreased. But it's still happening. If we want to save the Amazon rainforest, and all the creatures and plants that live in it, the deforestation has to stop completely – now!

So if you want to help save the largest rainforest on Earth, do some research on the Internet. Find an environmental organisation that's working to save the region, and see what you can do to help.

- A. The bad news is that it's not enough.
- B. These provide meat and make money for their owners.
- C. This sends gases into the Earth's atmosphere, which stop some of the Earth's heat escaping.
- D. As we've seen, they have been partly successful.
- E. Some of them move to other areas, but most of them die.
- F. How many new medicines are actually found in the rainforest each year?
- G. There are thousands – probably millions – more that we haven't discovered yet.

Ex.2.15. Use words or phrases from the article to complete the sentences. You've been given the first letter to help you.

- 1. How many s... of insect live in the rainforest?
- 2. I'd love to go on holiday to a t... country to see what it's like during the rainy season.
- 3. A tiger's natural h... is the jungle.

4. Every animal is a v... part of its environment and its disappearance could be an environmental disaster.

5. G... w... is a real problem and it could lead to changes in the weather all over the world.

Ex.2.16. Read the text and answer the questions.

1. What are the properties of the soil beneath wood?

2. What are the consequences of cutting down the trees?

3. How can leaf-canopy layer and leaf-litter layer in a forest prevent erosion?

When Trees are Cut Down, Soil Erosion Happens. Why?

The soil beneath wood has a sponge like structure. It can absorb and hold water, and all the organic matter in the soil, along with roots and fungal mycelia, makes it springy.

Trees cutting down results in lose of roots, fungal mycelia and fallen leaves, which stops the formation of new organic matter in the soil. The rest of organic matter decays and disappears and, as a result, sponginess of soil is lost.

The leaf-canopy layer and leaf-litter layer in a forest both intercept rain before it hits the ground and thereby slow down raindrops. However, if the forest has been cut down, the raindrops hit the bare ground at high speed and destroy the soil structure. It allows the surface particles of the soil to be washed away more easily.

Since the sponginess is gone, raindrops begin to compact the bare soil increasing its density. It means that less amount of water can be soaked into the soil. Instead water just runs off over the surface carying soil particles away. The flowing water forms grooves and then, over time, canals, and more and more soil is being washed away. This process is known as erosion.

Ex.2.17. Decide whether the statements are true or false according to the text above.

1. The soil under wood can't absorb and hold water.

2. New organic matter in the soil forms due to the roots, fungal mycelia and fallen leaves.

3. Leaf-canopy layer doesn't let raindrops hit the ground directly.

4. The harder the soil is, the lower the possibility of erosion is.

Ex.2.18. Match the words in column A with ones in column B to complete word combinations.

organic	layer (×2)
fungus	ground
fallen	water
high	matter
leaf-litter	speed
bare	leaves
leaf-canopy	mycelia
flowing	

Ex.2.19. Fill in the missing words. Mind the verb/noun.

*Hooverville, layers, formed, was, canyon, water, years, scraped,
looked, ranger, went, discovered*

Erosion

Once I ... (verb) to boulder canyon. That's just north of ... (noun). The walls of the ... (noun) looked like they were striped. I found out that the stripes were really ... (noun) of rock formed millions of ... (noun) ago. The ranger told me that the canyon was ... (verb) by something called erosion. That means that ... (noun) washed and ... (verb) away at the rock and dug out the canyon. The ... (noun) also said that many fossils had been ... (verb) in the walls of the canyon. It ... (verb) interesting.

Ex.2.20. Read the text below. Choose from the headings (A–F) the one which best fits each space (1–4). There are two choices you do not need to use.

I Love Forests!

1 _____

I used to love walking in the countryside, and particularly in the forest, when I was a young boy. Now that my job is to work in forests and look after the trees, I think I'm a very lucky person. I help to clear old trees that have become dangerous or ill, and plant new ones, so that the forest stays strong. Every day I'm out in the sunshine or the rain. It's a good way to spend my working days.

2 _____

I wish more people could find the time to spend in the forests. They don't understand how good it can be for us just to smell the fresh air and see the lovely colours of the leaves in autumn or the frost on the branches in winter. There's always the chance of seeing some wild animals, like rabbits, deer and birds, too. We don't see these in our towns. We should get closer to nature and then we would appreciate it more.

3 _____

Sometimes I get very annoyed with people who do visit the forest. Most people respect the countryside, but there are a few who don't. Many times I've found old furniture thrown away in the forest, because people didn't want to take it to a special rubbish collection point. On other occasions there have been small fires when people have thrown away cigarettes. And the amount of litter that is left behind after picnics is terrible. These people should realise that their behaviour has consequences – not only legal ones, but for nature, too.

4 _____

There is a real need for more people to work with trees, like I do. People don't realise that trees need to be looked after. They think they just grow! But people like me play an important role. We see the signs of problems early on. We notice if the numbers of animals or birds are down one year or if certain plants are not growing as they should. We report things like these and experts come to investigate. Unfortunately, more and more problems are occurring. But I am optimistic. I think nature will correct things in the end.

- A. Environmental warning signs
- B. Potential dangers to forest walkers
- C. Combination of work and pleasure
- D. Drawbacks of working with trees
- E. Caring about our actions
- F. Benefits of visiting forests

Ex.2.21. Complete the text with appropriate prepositions.

Solid Wastes

Solid wastes are the remains ... products you throw These things do not include wastes carried ... by air or water. Trash, garbage and junk are among the materials called solid wastes.

Some pollution ... solid waste is easy to see. Have you ever noticed garbage ... streets or ... parks? Have you ever seen garbage ... the highways? These are examples of litter. Litter is garbage that is not disposed ... properly outside of your homes.

Some people throw litter ... streets and sidewalks to get rid ... it. This can be a serious matter. If the amount ... litter increases, it can attract rats, mosquitoes and flies. These animals can be carriers ... disease.

Besides the dangers of litter, many once-beautiful areas are unpleasant ... see when they are covered ... litter.

Ex.2.22. Read the text and decide whether the statements below are true or false.

Solid Wastes and Landfills Problems

Landfill sites are not pretty. Unfortunately, the problem is bigger than just the sight of huge piles of waste. There are many health and environmental issues that are presented by landfill waste.

Problem 1: Toxins

A lot of the different materials that end up in landfills contain toxins that are eventually released and seep into the soil and groundwater. These substances are major hazards to the environment and can last for several years. For example, electronics such as computers, batteries and televisions that get thrown out and end up in landfills. These products contain substances like arsenic, acids, lead and others which eventually end up in our environment and pose threats to public health.

Mercury is another toxic substance that frequently appears in landfills. It comes from fluorescent light bulbs and poses major health risks. Inhaling even a small amount of mercury vapor can harm our kidneys and cause respiratory failure.

Problem 2: Leachate

Leachate is a liquid that forms when landfill waste breaks down and water filters through that waste and picks up toxins. Rain falling on the top of the landfill is the greatest contributor of leachate. In other cases, groundwater entering the landfill can produce leachate as well. As liquid seeps through the landfill and collects decomposed waste components, chemical reactions take place and produce a toxic leachate 'cocktail'. Chemicals commonly found in leachate include: methane, carbon dioxide, organic acids, alcohols, aldehydes.

Problem 3: Greenhouse Gas

Organic materials such as food scraps and yard waste are usually compacted when they are put into a landfill. The problem is that this removes oxygen and causes the material to break down anaerobically. Over time, the process will produce methane: a type of greenhouse gas that is 20 times more potent than carbon dioxide and wreaks havoc on our environment. Methane is also flammable and can be very dangerous in large concentrations.

Aside from the financial impacts, waste that is buried in a landfill will break down slowly and present problems for future generations.

1. A lot of health and environmental problems are caused by landfill wastes.

2. Toxins usually get into the soil from groundwater.

3. Toxins are long-lasting hazardous substances.

4. Risk for humans' kidneys and lungs may come from fluorescent light bulbs.

5. Water is not important for leaching process.

6. Leachate is a mixture of reacted dangerous substances dissolved in water.

7. Landfills contribute to the global warming producing greenhouse gases.

8. Organic materials and oxygen are needed to produce methane in the landfills.

9. Methane can cause fire in the landfills.

10. Future generations will have to solve the problems caused by present landfills wastes.

Ex.2.23. Put the words into correct order to make sentences.

1. Soil and groundwater / from / materials / Toxins / in / the / different / landfills / into / get / the.
2. Substance / Mercury / appears / a / that / toxic / frequently / in / is / landfills.
3. Water / waste / Landfill / down / and / filters / through / toxins / that / and / picks / up / breaks / waste.
4. The / entering / produce / Groundwater / can / landfill / well / leachate / as.
5. Usually / materials / break / the / anaerobically / in / landfills / Organic / down.
6. Will / buried / down / in / a / landfill / break / slowly / future / and / for / cause / Waste / generations / problems.

Ex.2.24. Match the words with their definitions.

- | | |
|----------------|---|
| 1) mercury | a) a chemical substance that neutralizes alkalis, dissolves some metals, and turns litmus red; typically, a corrosive or sour-tasting liquid of this kind |
| 2) threat | b) breathe in (air, gas, smoke, etc.) |
| 3) flammable | c) the chemical element of atomic number 80, a heavy silvery-white metal which is liquid at ordinary temperatures |
| 4) huge | d) an important topic or problem for debate or discussion |
| 5) groundwater | e) a statement of an intention to inflict pain, injury, damage, or other hostile action on someone in retribution for something done or not done |
| 6) inhale | f) make (something, especially something bad) happen |
| 7) issue | g) easily set on fire |
| 8) acid | h) water held underground in the soil or in pores and crevices in rock |
| 9) hazard | i) large; enormous |
| 10) cause | j) a danger or risk |

Ex. 2.25. Complete the text with the words from the box.

a) sewage	b) organic	c) disposal	d) enlightened
e) acid rain	f) herbicides	g) pesticides	h) ecological
i) extinction	j) sustainable	k) deforestation	l) animal rights

When industrialisation began, little thought was given to its 1)... effects. Raw, untreated 2)... was allowed to pollute our seas and rivers. Animals were killed for profit to the point of 3).... The loss of trees through uncontrolled 4) ... caused erosion and unstable climate, 5)... was caused by the poisonous gases man sent into the atmosphere. Chemicals in 6)... killed animal life, 7)... destroyed plants. The balance of nature was disturbed.

It is only now that we are waking up to the problem. More natural, 8)... farming is advocated. Legislation controls the 9)... of waste products into our air and water. Wildlife organizations are becoming more militant in their fight for 10)... . Replanting policies in some parts of the world mean that our forests should in future be 11)....

We can only hope that growing public awareness and 12)... legislation will produce a world which is safe for us and will provide a good quality of life for future generations.

Ex.2.26. Match the words in A with their synonyms /explanations in B.

A	B
1) impact	a) when oil transported by tankers runs or flows into the sea
2) campaigning	b) waste or worthless material
3) pesticides	c) cause the destruction of smth / smb
4) oil spill	d) series of planned activities with social, commercial or political aim
5) rubbish	e) not mixed with any other substance / clean
6) ruin	f) effect
7) threat	g) smoke, gas or vapor that smells strongly
8) discharge	h) land bordering the sea / the seaside
9) coast	i) warning of future danger
10) pure	j) chemical substance used to kill pests/insects
11) fumes	k) pour out a liquid substance

Ex.2.27. Fill in the blanks with words from the column A above.

1. Jacques Ives Cousteau spent his life ... for the protection of Earth.
2. The air is thick with factory
3. The sewers ... their contents into the sea.
4. The dustmen haven't collected the ... yet.
5. The overuse of ... harms plants and kills birds.
6. Deforestation made a disastrous ... on animal life.
7. You ... your health by smoking so heavily.
8. The recent ... has killed sea animals and polluted beaches.
9. The air is so ... in the countryside.
10. Iran is a country living under the constant ... of earthquakes.
11. They spent their holidays on the

UNIT 3. AIR POLLUTION

Key words

to emit – випромінювати

impure – нечистий

coal combustion – спалювання
вугілля

to ban – забороняти

rubbish – сміття

to breathe – дихати

to escape – втікати

smoke – дим

to overcome – подолати

strict laws – суворі закони

exhaust fumes – вихлопні гази

poisonous – отруйний

respiratory diseases – респіраторні
захворювання

to fine – штрафувати

to contain – містити

particle – частинки

acidity – кислотність

to estimate – оцінювати

premature death – передчасна смерть

susceptible – сприйнятливі

influence – вплив

to reduce – зменшувати

to accumulate – накопичувати

emission – виділення

fossil fuel – викопне паливо

to derive – добувати

mist – туман

to warn – попереджати

to survive – виживати

dust – пил

decline – зниження

to prevent – запобігати

to expose – підвергати

Ex.3.1. Read the text and answer the questions below.

Air Pollution

Pollution, especially air pollution is becoming a serious problem. Day by day, the air that we breathe is getting dirtier and more impure. Pollution is a term used to describe a dirty environment. It is the presence in the environment of the materials that are harmful to living things. Most pollution is caused by people.

The air is an important part of our environment. Air is polluted from many sources. The burning of coal, gasoline and trash contribute to air pollution. Burning these materials produces wastes that escape into the air. These wastes may be in the form of gases, smoke or small pieces of dirt. Wastes in these forms are called pollutants.

There are many causes of air pollution. The chemical wastes from factories pollute the air with carbon dioxide and other harmful

pollutants. It makes the air dirty. To overcome this problem, we need strict laws like closing down the factories that pollute the air.

Another cause of air pollution is the exhaust fumes from cars and other vehicles. They emit poisonous gases like carbon monoxide into the atmosphere and make the air very unhealthy. To control this problem, we should start using unleaded petrol.

In addition, the open burning of rubbish releases smoke and other harmful gases into the air. This results in haze which leads to serious respiratory problems. We need to fine the people involved in open burning.

Besides, our air is also polluted by chemical fertilizers and pesticides which contain poisonous chemicals. They release toxic gases into the atmosphere. These fertilizers should be banned and natural fertilizers should be used.

Finally, smoke from factories also dirties the air. The smoke which contains polluted particles makes the air unhealthy and results in smog. Strict action like temporary closure should be taken against the factories involved. Thus, we should cooperate with the government and control air pollution to save our environment.

1. What is the basic definition of air pollution?
2. What are the main sources of air pollution?
3. What do we call pollutants?
4. What should we do to prevent air pollution from factories?
5. Why should natural fertilizers be used?

Ex.3.2. Decide whether the statements are true or false according to the text above.

1. Air with harmful materials in it is considered polluted.
2. Burning of trash contributes to both protection and pollution of the environment.
3. The chemical wastes from factories and the exhaust fumes from cars pollute the air with carbon dioxide.
4. Open burning is fine for the environment.
5. Fertilizers and pesticides pollute the air with solid wastes of poisonous chemicals.
6. Smog is a result of industrialization.

Ex.3.3. Match the words with their definitions.

- | | |
|--------------|---|
| 1) smoke | a) a combustible black or dark brown rock consisting chiefly of carbonized plant matter, found mainly in underground seams and used as fuel |
| 2) emit | b) waste material; refuse or litter |
| 3) impure | c) a visible suspension of carbon or other particles in air, typically one emitted from a burning substance |
| 4) rubbish | d) punish (someone) for an illegal or illicit act by making them pay a sum of money |
| 5) coal | e) produce and discharge (something, especially gas or radiation) |
| 6) exhaust | f) dirty |
| 7) ban | g) a system of rules that a society or government develops in order to deal with crime, business agreements, and social relationships |
| 8) temporary | h) waste gases or air expelled from an engine, turbine, or other machine in the course of its operation |
| 9) fine | i) lasting for only a limited period of time; not permanent |
| 10) law | j) officially or legally prohibit (something) |

Ex.3.4. Read the text and answer the questions below.

Air Pollution and Health Problems

The relationship between humanity and the environment is a delicate balance. Since the industrial revolution, the world's population has increased exponentially, and with the population growth, the environment has been profoundly affected.

Air pollution is a major cause of death and disease globally. The health effects range from increased hospital admissions and emergency room visits, to increased risk of premature death. An estimated 4.2 million premature deaths globally are linked to air pollution, mainly from heart disease, stroke, chronic obstructive pulmonary disease, lung cancer, and acute respiratory infections in children.

Air pollution can affect our health in many ways with both short-term and long-term effects. Different groups of individuals are affected by air pollution in different ways. Some individuals are much more

sensitive to pollutants than others. Young children and elderly people often suffer more from the effects of air pollution. People with health problems such as asthma, heart and lung diseases may also suffer more when the air is polluted.

The extent to which an individual is harmed by air pollution usually depends on the total exposure to the damaging chemicals. For example, when people are exposed to pollution for short periods, they experience irritation to the eyes, nose and throat, and the lungs. Other symptoms can include headaches, nausea, and allergic reactions. In the great 'Smog Disaster' in London in 1952, four thousand people died in a few days due to the high concentration of pollution.

Being exposed to dangerous pollutants for longer periods has more serious effects on human health. These can include lung diseases, lung cancer, heart diseases, and even damage to brain, nerves, liver, or kidneys.

Medical conditions caused by air pollution can be very expensive. In fact, countries spend billions of dollars each year on the health care expenses, lost productivity in the workplace and human safety in order to cope with economic problems caused by air pollution.

1. What fatal diseases may be caused by air pollution?
2. Which groups of people are more sensitive to air pollution?
3. Why did thousands of people die in 'Smog Disaster'?
4. What happens when people are exposed to air pollution for a long time?
5. How does air pollution affect the economy of countries?

Ex.3.5. Match the paragraphs with their correct headlines. There is one extra heading that you do not need.

1. Possible solutions to air pollution problem.
2. The effect of air pollution on economy.
3. Short-term effects of pollution.
4. Long-term effects of pollution
5. The influence of population growth on the environment.
6. The impact of pollution on different people.
7. Air pollution and fatal diseases.

Ex.3.6. Match the adjectives in column A with nouns in column B to complete word combinations from the text above.

A	B
delicate	infections
industrial	chemicals
premature	pollutants
respiratory	balance
short-term and long-term	concentration
damaging	health
allergic	problems
high	revolution
dangerous	deaths
economic	reactions
human	conditions
medical	effects

Ex.3.7. Complete the text with the words from the box.

fuels, weak, chemicals, tiny, smoke, water, exhaust, harmful

How is Acid Rain Produced?

Air pollution results in acid rains. When any type of fuel is burnt, lots of different 1) ... are produced. The 2) ... that comes from a fire or the fumes that come out of a car 3) ... don't just contain the sooty grey particles that you can see – they also contain lots of invisible gases that can be even more 4) ... to our environment.

Power stations, factories and cars burn 5) ... and therefore they produce polluting gases. Some of the gases (especially nitrogen oxides and sulphur dioxide) react with the 6) ... droplets of 7) ... in clouds to form sulphuric and nitric acids. The rain from the clouds falls as very 8) ... acid, which is known as 'acid rain'.

Ex.3.8. Complete the sentences using appropriate words if necessary.

1. Factories and cars / emit/ smoke / air.
2. Sulphur dioxide and nitrogen oxide / sulphuric acid and nitric acid / water / form.
3. Pollution / blow / one country to another / wind.

4. Poisonous oxidants / drop / trees / land / sea / rain / snow.
5. Trees / damage / acid rain.

Ex.3.9. Read the text and fill in the gaps with the phrases below.

The Effects of Acid Rain

Acid rain can be carried great distances in the atmosphere, not just between countries but also from continent to continent. The acid can also take the form of snow, mists and dry dusts. The rain sometimes falls many miles from the source of pollution but wherever it falls it can 1) _____.

Forests all over the world are dying, fish are dying. In Scandinavia there are dead lakes, which are crystal clear and 2) _____. Many of Britain's freshwater fish are threatened, there have been reports of deformed fish being hatched. This leads to fish-eating birds and animals being affected also. Scientists have been doing a lot of research into how acid rain affects the environment.

It is thought that acid rain can cause trees to grow more slowly or even to die but scientists have found that it is not the only cause. The same amount of acid rain seems to have more effect in some areas than it does in others. As acid rain falls on a forest it trickles through the leaves of the trees and 3) _____. Some of it finds its way into streams, and then into rivers and lakes. Some types of soil can help neutralise the acid – they have what is called a 'buffering capacity'. Other soils are already slightly acidic and these are particularly susceptible to the effects of acid rain.

The most obvious effects of acid rain can be found in aquatic habitats. Acid rain runs off the land and ends up in streams, lakes and marshes. The rain also falls directly on these areas.

As the acidity of a lake increases, the water becomes cleaner but 4) _____. Some species of plant and animal are better able to survive in acidic water than others. Freshwater shrimps, snails, mussels are the most quickly affected by acidification followed by fish such as minnows, salmon and roach. The roe and fry of the fish are the worst affected, the acidity of the water can cause deformity in young fish and can prevent eggs from hatching properly. The acidity

of the water does not just affect species directly, it also causes toxic substances like aluminium to be released into the water from the soil, 5) _____.

Lakes, rivers and marshes each have their own fragile ecosystem with many different species of plants and animals depending on each other to survive. If a species of fish disappears, the animals which feed on it 6) _____.

Every type of material will become eroded sooner or later by the effects of the climate. Water, wind, ice and snow help in the erosion process but unfortunately, acid rain 7) _____. Statues, buildings, vehicles, pipes and cables can suffer as well. The worst affected are things made from limestone or sandstone as these types of rock are particularly susceptible and can be affected by air pollution in gaseous form as well as by acid rain.

- 1) harming fish and other aquatic animals
- 2) contain no living creatures or plant life
- 3) have a serious effect on soil, trees, buildings, and water
- 4) can help make this natural process even quicker
- 5) the numbers of fish and other water animals decline
- 6) runs down into the soil below
- 7) will gradually disappear too

Ex.3.10. Answer the questions to the text above.

1. Which forms can acid rain take?
2. What effects does acid rain have on trees?
3. How does the acidity of water affect species in lakes?
4. What substance is released into the water from the soil harming aquatic animals?
5. How does acid rain influence buildings?

Ex.3.11. Decide whether the statements are true or false according to the text above.

1. The acid rain usually falls in that area where it was formed.
2. Sometimes fish and plants can't live in crystal clear lakes.
3. 'Buffering capacity' helps reduce the effects of acid rain on the soil.

4. Lakes and rivers may accumulate more acidity than soil does.
5. Fish are worse affected by the acidity of the water than shrimps, snails, and mussels.
6. Erosion of the soils contributes to the acid rains formation.

Ex.3.12. Match the words with their definitions.

- | | |
|----------------|--|
| 1) mist | a) rain polluted by acid that has been released into the atmosphere from factories and other industrial processes |
| 2) acid rain | b) an area of low-lying land which is flooded in wet seasons or at high tide, and typically remains waterlogged at all times |
| 3) decline | c) a cloud of tiny water droplets suspended in the atmosphere at or near the earth's surface that limits visibility |
| 4) dust | d) having the properties of an acid, or containing acid; having a pH below 7 |
| 5) survive | e) relating to water |
| 6) susceptible | f) fine, dry powder consisting of tiny particles of earth or waste matter lying on the ground or on surfaces or carried in the air |
| 7) marsh | g) the chemical element of atomic number 13, a light silvery-grey metal |
| 8) aquatic | h) likely or liable to be influenced or harmed by a particular thing |
| 9) aluminium | i) become smaller, fewer, or less; decrease |
| 10) acidic | j) continue to live or exist, especially in spite of danger or hardship |

Ex.3.13. Read the text and choose the best heading to each paragraph. There are two extra headings that you do not need.

- A. Smog problems around the world
- B. Effect of smog on children's health
- C. Smog categories
- D. Smog in agricultural areas
- E. Smog is a kind of pollution

Smog

1. Smog is a type of severe air pollution. The word 'smog' was coined in the early 20th century as a blending of the words smoke and fog to refer to smoky fog, its opacity, and odor. The word was then intended to refer to what was sometimes known as pea soup fog, a familiar and serious problem in London from the 19th century to the mid-20th century. This kind of visible air pollution is composed of nitrogen oxides, sulphur oxides, ozone, smoke and other particulates. Man-made smog is derived from coal combustion emissions, vehicular emissions, industrial emissions, forest and agricultural fires and photochemical reactions of these emissions.

2. Smog is often categorized as being either summer smog or winter smog. Summer smog is primarily associated with the photochemical formation of ozone. During the summer season when the temperatures are warmer and there is more sunlight present, photochemical smog is the dominant type of smog formation. During the winter months when the temperatures are colder, and atmospheric inversions are common, there is an increase in coal and other fossil fuel usage to heat homes and buildings. These combustion emissions, together with the lack of pollutant dispersion under inversions, characterize winter smog formation. While photochemical smog is the main smog formation mechanism during summer months, winter smog episodes are still common. Smog formation in general relies on both primary and secondary pollutants. Primary pollutants are emitted directly from a source, such as emissions of sulfur dioxide from coal combustion. Secondary pollutants, such as ozone, are formed when primary pollutants undergo chemical reactions in the atmosphere.

3. Photochemical smog, as found for example in Los Angeles, is a type of air pollution derived from vehicular emission from internal combustion engines and industrial fumes. These pollutants react in the atmosphere with sunlight to form secondary pollutants that also combine with the primary emissions to form photochemical smog. In certain other cities, such as Delhi, smog severity is often aggravated by stubble burning in neighboring agricultural areas. The atmospheric pollution levels of Los Angeles, Beijing, Delhi, Lahore, Mexico City, Tehran and other cities are often increased by an inversion that traps pollution close to the ground. The developing smog is usually toxic to humans and can cause severe sickness, a shortened life span, or premature death.

Ex.3.14. Answer the questions to the text above.

1. What is smog?
2. What is man-made smog derived from?
3. What categories can smog be divided into?
4. What is the difference between summer smog and winter smog?
5. What are primary / secondary pollutants? How are they formed?
6. What do you know about photochemical smog?

Ex.3.15. Match the verbs from box A with prepositions from box B to complete word combinations from the text above.

A

refer known composed derived associated relies emitted combine
--

B

from (×2) as of with (×2) to on

Ex.3.16. Find English equivalents to the following words and word combinations in the text above.

Смог, суворий, змішування, непрозорість, запах, оксиди азоту, оксиди сірки, озон, дим, тверді частинки, викиди продуктів згоряння вугілля, автомобільні викиди, промислові викиди, лісові та сільськогосподарські пожежі, фотохімічні реакції, фотохімічне утворення озону, домінуючий тип, атмосферні інверсії, обігрівати будинки і будівлі, викопне паливо, відсутність дисперсії забруднюючих речовин, первинні і вторинні забруднювачі, виділяти, двигуни внутрішнього згоряння, помислові пари, реагувати в атмосфері з сонячними променями близько до землі, токсичний для людей, важкі захворювання, передчасна смерть.

Ex.3.17. Decide if the sentences refer to smog or acid rain.

1. It damages forests, soil, rivers and lakes.
2. Air looks hazy.
3. It makes the air hard to breathe.
4. It can kill fish and other living things.
5. Pollutants mix with water in the air.
6. Power plants and cars are the main cause.

7. It's bad for lungs of humans and animals.
8. It's harmful to trees and plants.
9. It's a mixture of smoke and fog.
10. It pollutes the water when it gets into rivers and lakes.

Ex.3.18. Complete the text with the words from the box.

<i>masks smog buildings cancel severe pollutants domestic</i>

China's Air Pollution Again at Danger Levels

Beijing residents were advised to stay indoors as much as possible with 1)... pollution at high levels. Dangerously high pollution has covered Beijing with 2)... for the second time since last month, forcing airlines to 3)... flights because of poor visibility and asking the city government to warn the residents to stay indoors.

Visibility was less than 100 metres in some areas of eastern China. The official Xinhua News Agency reported that Air China had cancelled 14 4)... flights in and out of the Beijing airport and 20 flights in Qingdao.

The outlines of 5)... in the Chinese capital disappeared in white mist and people were wearing face 6)... against the thick smog. The US embassy reported a level of PM25, one of the worst 7)...., at 526 micrograms per cubic metre, which is more than 20 times higher than World Health Organisation safety levels over a 24-hour period.

1. Why were Beijing residents advised to stay indoors?
2. How long has Beijing been covered in smog?
3. Why were people wearing face masks?
4. How many flights did Air China cancel?
5. What was the level of the pollution?

Ex.3.19. Read the text and answer the questions below.

Ozone Layer Depletion

Ozone depletion describes two related events observed since the late 1970s: a steady lowering of about four percent in the total amount of ozone in Earth's atmosphere (the ozone layer), and a much larger springtime decrease in stratospheric ozone around Earth's

polar regions. The latter phenomenon is referred to as the ozone hole. There are also springtime polar tropospheric ozone depletion events in addition to these stratospheric events.

The main cause of ozone depletion and the ozone hole is manufactured chemicals, especially manufactured halocarbon refrigerants, solvents, propellants and foam-blowing agents (chlorofluorocarbons (CFCs), HCFCs, halons), referred to as ozone-depleting substances (ODS). These compounds are transported into the stratosphere by wind after being emitted from the surface, mixing much faster than the molecules can settle. Once in the stratosphere, they release halogen atoms through photodissociation, which catalyze the breakdown of ozone (O_3) into oxygen (O_2). Both types of ozone depletion were observed to increase as emissions of halocarbons increased.

Ozone depletion and the ozone hole have generated worldwide concern over increased cancer risks and other negative effects. The ozone layer prevents most harmful UVB wavelengths of ultraviolet light (UV light) from passing through the Earth's atmosphere. These wavelengths cause skin cancer, sunburn and cataracts, which were projected to increase dramatically as a result of thinning ozone, as well as harming plants and animals. These concerns led to the adoption of the Montreal Protocol in 1987, which bans the production of CFCs, halons and other ozone-depleting chemicals.

The ban came into effect in 1989. 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. What is ozone depletion?
2. What is the main cause of ozone depletion and the ozone hole?
3. Which atoms catalyze the breakdown of ozone into oxygen?
4. What is the function of the ozone layer?
5. Which negative effects are caused by UVB wavelengths as a result of thinning ozone?
6. When did ozone levels begin to recover?

Ex.3.20. Match the words with their definitions.

- | | |
|----------------|---|
| 1) breakdown | a) reduction in the number or quantity of something |
| 2) solvent | b) cause (an action or process) to begin |
| 3) ozone layer | c) the chemical or physical decomposition of something |
| 4) concern | d) officially or legally prohibit (something) |
| 5) depletion | e) the part of the Earth's atmosphere that protects living things from the harmful radiation of the sun |
| 6) emission | f) allow (something) to move, act, or flow freely |
| 7) catalyze | g) a liquid, typically one other than water, used for dissolving other substances |
| 8) generate | h) anxiety; worry |
| 9) release | i) produce or create |
| 10) ban | j) the production and discharge of something, especially gas or radiation |

Ex.3.21. Put the verbs in brackets into the correct tense.

If I were a scientist, I 1)... (*find*) a way to repair the hole in the ozone layer. Scientists believe that if world temperatures 2)... (*rise*), sea levels 3)... (*rise*) too and many towns 4)... (*be flooded*). It is also possible that many fertile places 5)... (*become*) desert. If this happened, there 6)... (*be*) chaos throughout the world. If people had disposed of their rubbish more carefully, the environment 7)... (*not/be polluted*) in the first place. Governments are also responsible for this situation, because if there had been tighter laws on pollution, factories 8)... (*not/release*) such harmful chemicals into the atmosphere.

Ex.3.22. Fill in the blanks with words from the box.

<i>destruction</i>	<i>contaminate</i>	<i>release</i>	<i>breathe</i>	<i>as a result</i>	<i>threat</i>
	<i>dump</i>	<i>realize</i>	<i>impact</i>		

Pollution: a Threat to Our Planet

People and big factories have a(n) 1)... on our environment. People 2)... garbage and rubbish. Therefore they 3)... the land and the water we drink. Besides, factories and cars 4)... fumes. 5)... , they pollute the air we 6)... . Human beings don't 7)... that their actions are a(n) 8)... to our planet because they are contributing to the 9)... of the world.

UNIT 4. OTHER KINDS OF POLLUTION

Key words

radioactive – радіоактивний	to require – вимагати
decay – розпад	shielding – захист від
ray – промінь	випромінювання
nuclear – ядерний	to store – зберігати
radiation – випромінювання	concrete – бетон
fuel rod – паливний стрижень	soluble – розчинний
explosion – вибух	to consume – споживати
nuclear power plant – атомна	propagation – поширення
електростанція	impact – вплив
disaster – катастрофа	length – довжина
weapon – зброя	to disrupt – розривати
to pose – являти собою	resin – смола
life span – тривалість життя	toxic fumes – токсичні пари
precautionary – профілактичний	to incinerate – спалювати
measure – міра	a generator – генератор
sludge – осада	residential – житловий

Ex. 4.1. Read the text and answer the questions below.

Radioactive Pollution

Radioactive pollution or radioactive contamination is the deposition or presence of radioactive substances on surfaces or within solids, liquids or gases (including the human body), where their presence is unintended or undesirable. Such contamination presents a hazard because of the radioactive decay of the contaminants – the process by which an unstable atomic nucleus loses energy by emitting radiation, such as alpha particles or beta particles, gamma rays or neutrons. A material containing such unstable nuclei is considered radioactive. The degree of hazard is determined by the concentration of the contaminants, the energy of the radiation being emitted, the type of radiation, and the proximity of the contamination to organs of the body.

Radiation affects almost all life forms on the planet (people, plants, and animals) and their surroundings – the air, water, soil, buildings, clothes, etc. To be more specific, the radiations can cause mutations

that lead to cancer and eventually to death. It depends on the dose of radiation or the level of pollution.

Radioactive pollution is the most dangerous for the environment since the wastes keep their radioactive properties for thousands of years. There is no way to have them assimilated in the soil, the water or the air in the initial form.

Each radioactive material (or isotope) has its own decay pattern. The rate at which a radioactive isotope decays is measured in half-life. The term 'half-life' is defined as the time it takes for one-half of the atoms of a radioactive material to disintegrate. Half-lives for various radioisotopes can range from a few microseconds to billions of years.

Natural radioactive elements are present in very low concentrations in Earth's crust, and are brought to the surface through human activities such as oil and gas exploration or mining, and through natural processes like leakage of radon gas to the atmosphere or through dissolution in ground water. Another example is coal ash produced from coal burning in power plants.

The sources of radioactive pollution involve any process that gives off radiation into the environment: research and medical procedures and waste, nuclear power plants, TVs, computers, radio waves, cell phones, etc. The most dangerous ones are the following:

1. Nuclear explosions and detonations of nuclear weapons – probably the highest amounts of human-induced radioactive pollution have been generated in the mid-twentieth century through various experimental or combat nuclear detonations.

2. Defensive weapon production may also release radioactivity from the radioactive materials handled (usually with elevated health risks).

3. Nuclear waste handling and disposal may generate low to medium radiation over a long period of time. The radioactivity may contaminate and propagate through air, water, and soil as well. Thus, their effects may not be easily distinguishable and are hard to predict. Additionally, some nuclear waste locations may not be identified. The main issue with the radioactive waste is the fact that it cannot be degraded or treated chemically or biologically. Thus, the only options are to contain the waste by storing it in tightly closed containers shielded

with radiation-protective materials (such as Pb) or, if containing is not possible, to dilute it. The waste may also be contained by storage in remote areas with little or no life (such as remote caves or abandoned salt mines). However, in time, the shields (natural or artificial) may be damaged. Additionally, the past waste disposal practices may not have used appropriate measures to isolate the radiation. Therefore, such areas need to be carefully identified and access restrictions promptly imposed.

4. Mining of radioactive ores (such as uranium ores) involves the crushing and processing of radioactive ores and generates radioactive by-products. Mining of other ores may also generate radioactive waste (such as mining of phosphate ores).

5. Nuclear accidents cause the biggest and the most harmful radioactive pollution ever. The examples are the nuclear explosion at a nuclear power plant in Chernobyl, Ukraine, that occurred in 1986. Another example is the 1979 explosion at the Three Mile Island nuclear-power generating plant near Harrisburg, PA, the USA, and the Fukushima Daiichi nuclear disaster of 2011 (Japan).

1. What is radioactive pollution?
2. Why does radioactive contamination present a hazard?
3. How is the degree of hazard determined?
4. What can radiation cause?
5. Why is radioactive pollution considered the most dangerous for the environment?
6. How is the term 'half-life' defined?
7. What are the sources of radioactive pollution?
8. What is the main issue with the radioactive waste?
9. What are possible nuclear waste disposal practices?
10. What does mining of radioactive ores involve?
11. What are the examples of nuclear accidents?

Ex.4.2. Decide whether the statements are true or false according to the text above.

1. Radiation occurs when unstable nuclei of a particular material lose energy by emitting particles, rays, or neutrons.
2. Radioactive decay may prevent radiation.

3. Radioactive materials are hazardous due to the presence of unstable nuclei in them.

4. Human activities help natural radioactive materials get from the Earth's crust into the atmosphere, water, and soil.

5. TVs, computers, and cell phones emit radiation as well as nuclear power plants.

6. Nuclear explosions and detonations of nuclear weapons hardly contributed to the radioactive pollution.

7. Nuclear wastes generate low to medium radiation over a long period of time and thus they don't have to be stored in a special way.

8. Only one kind of mining contributes to the radioactive pollution – the mining of radioactive ores – as it generates radioactive by-products.

9. The USA, Ukraine and Japan are the countries that have contributed significantly to the radioactive pollution of the whole world.

Ex.4.3.Match the words with their definitions.

- | | |
|------------------|--|
| 1) explosion | a) a measure, quantity, or frequency, typically one measured against another quantity or measure |
| 2) mining | b) produce and discharge (something, especially gas or radiation) |
| 3) rate | c) radioactive waste material, for example from the use or reprocessing of nuclear fuel |
| 4) emit | d) a sudden, violent burst of energy, for example one caused by a bomb |
| 5) leakage | e) the industry and activities connected with getting valuable or useful minerals from the ground, for example coal, diamonds, or gold |
| 6) mutation | f) cause to rot or decompose |
| 7) nuclear waste | g) a thing designed or used for inflicting bodily harm or physical damage |
| 8) generate | h) the changing of the structure of a gene, resulting in a variant form which may be transmitted to subsequent generations |
| 9) decay | i) the accidental admission or escape of liquid or gas through a hole or crack |
| 10) weapon | j) produce or create |

Ex.4.4. Match the verbs from column A with word expressions from column B to complete as many expressions as you can.

- | A | B |
|---------------|---|
| 1) present | a) mutations |
| 2) lose | b) through air, water, and soil |
| 3) emit | c) a hazard |
| 4) affect | d) to cancer |
| 5) cause | e) their radioactive properties |
| 6) lead | f) energy |
| 7) keep | g) radioactive by-products |
| 8) range | h) radiation |
| 9) propagate | i) from a few microseconds to billions of years |
| 10) generates | j) all life forms |

Ex.4.5. Read the text and choose the most suitable heading from the list A–F for each part (1–5) of the text. There is one extra heading which you do not need to use.

- A. Soil infertility
- B. Cell destruction
- C. Genetic mutations
- D. Radioactive wastes
- E. Burns
- F. Diseases.

Effects of Radioactive Pollution

The hazards to people and the environment from radioactive contamination depend on the nature of the radioactive contaminant, the level of contamination, the extent of contamination, and can have the following damaging effects.

1. _____

Radiation has adverse effects when it comes to genetics. It leads to damage of DNA strands causing genetic break up over time. The degree of genetic mutation leading to changes in DNA composition varies due to the level of radiation and the kind of exposure.

2. _____

Cancer is the dominant radiation related disease. It has developed over the years and poses great risk in global health. Others include

leukemia, anemia, hemorrhage, a reduction in the life span leading to premature aging and premature deaths as well as cardiovascular complications. Leukemia, for instance, is caused by radiation in the bone marrow.

3. _____

Radioactive pollution has diverse effects such as the alteration of cells. Radiation distorts the cells causing permanent damage of the organs and entire organ systems. In case of too much radiation, permanent illnesses and death are inevitable.

4. _____

Radiation is not easy to feel but it is easy to realize that you have been affected. Appearing of burns, red lesions and sores indicates it and may cause skin cancer.

5. _____

When radiation emits to the atmosphere it penetrates into the soil as well. Radioactive substances in the soil react together with the various nutrients and eliminate them, thus making the soil infertile and highly toxic. Plants that grow in radioactive polluted soil are also genetically modified.

Ex.4.6. Match the adjectives from column A with nouns from column B to complete word combinations from the text above.

A	B
1) genetic	a) health
2) great	b) complications
3) global	c) break up
4) premature	d) effects
5) cardiovascular	e) substances
6) diverse	f) risk
7) red	g) deaths
8) radioactive	h) lesions

Ex.4.7. Compile these sentences using the word in brackets in the correct form.

1. The effects of this radiation can be very... (*disaster*).
2. This is one of many... (*environment*) problems.

3. Pollution is very ... (*harm*) to people's health.
4. Fortunately there are now many ... (*conserve*) groups.
5. Their aim is the ... (*protect*) of all natural things.

Ex.4.8. Complete the text with the words from the box.

enter helpful nuclear heat winds electricity cancer
pollutants realize polluted

Radiation

Not all forms of radiation are 1)... . Radiation we receive from the sun can be helpful. It provides light and 2)... . You could not live without the energy from the sun. X-rays are another kind of 3)... radiation. Radiation also treats cancer by destroying some types of cancer cells.

Radiation is produced in 4)... power plants in the process of making 5)... . Radiation from a nuclear power plant can be dangerous. If radiation escapes from such a plant, the environment around it would become 6)... . Radiation can 7)... nearby air and water. When it happens, living things can be harmed. Contact with too much radiation can cause some kinds of 8)... .

Nuclear explosions produce particle radiation. These particles may be carried thousands of miles by 9)... . So, radiation can enter people's bodies through the air they breathe and the food they eat.

Most countries now 10)... the dangers of pollution caused by radiation. As a result, the number of nuclear tests has been reduced. Nuclear power plants are also regulated.

Ex.4.9. Read the text and answer the questions.

1. What is radioactive waste?
2. Why does radioactive waste have to be isolated for a long period?
3. Where are low-level wastes generated from?
4. Where can short-lived wastes and long-lived wastes be stored?
5. What do fuel rods contain?
6. What are the best long-term solutions for high-level wastes?

Radioactive Waste

Radioactive waste is waste that contains radioactive material. Radioactive waste is usually a by-product of nuclear power generation

and other applications of nuclear fission or nuclear technology, such as research and medicine. Radioactive waste is hazardous to all forms of life and the environment, and is regulated by government agencies in order to protect human health and the environment.

Radioactive materials naturally decays over time, so radioactive waste has to be isolated and confined in appropriate disposal facilities for a sufficient period until it no longer poses a threat. The time radioactive waste must be stored for depends on the type of waste and radioactive isotopes.

Low-level waste (LLW) is generated from hospitals and industry, as well as the nuclear fuel cycle. Low-level wastes include paper, rags, tools, clothing, filters, and other things which contain small amounts of mostly short-lived radioactivity. Materials that originate from any region of an Active Area are commonly designated as LLW as a precautionary measure even if there is only a remote possibility of being contaminated with radioactive materials. Such LLW typically exhibits no higher radioactivity than one would expect from the same material disposed of in a non-active area, such as a normal office block.

Intermediate-level waste (ILW) contains higher amounts of radioactivity and in general requires shielding, but not cooling. Intermediate-level wastes include resins, chemical sludge and metal nuclear fuel cladding, as well as contaminated materials from reactor decommissioning. It may be solidified in concrete or bitumen for disposal. As a general rule, short-lived waste (mainly non-fuel materials from reactors) is buried in shallow repositories, while long-lived waste (from fuel and fuel reprocessing) is deposited in geological repository.

High-level waste (HLW) is produced by nuclear reactors. The exact definition of HLW differs internationally. After a nuclear fuel rod serves one fuel cycle and is removed from the core, it is considered HLW. Fuel rods contain fission products and transuranic elements generated in the reactor core. Spent fuel is highly radioactive and often hot. HLW accounts for over 95 percent of the total radioactivity produced in the process of nuclear electricity generation. The amount of HLW worldwide is currently increasing by about 12,000 metric tons every year. HLW have been shipped to other countries to be stored or reprocessed, and in some cases, shipped back as active fuel.

The radioactive waste from spent fuel rods consist primarily of cesium-137 and strontium-90, but it may also include plutonium, which can be considered a transuranic waste. The half-lives of these radioactive elements can differ quite extremely. Some elements, such as cesium-137 and strontium-90 have half-lives of approximately 30 years. Meanwhile, plutonium has a half-life of that can stretch to as long as 24,000 years.

The ongoing controversy over high-level radioactive waste disposal is a major constraint on the nuclear power's global expansion. Most scientists agree that the main proposed long-term solution is deep geological burial, either in a mine or a deep borehole. However, almost six decades after commercial nuclear energy began, no government has succeeded in opening such a repository for civilian high-level nuclear waste.

Ex.4.10. Decide whether the statements are true or false according to the text above.

1. The side-effects of nuclear power generation are hazardous to all forms of life and the environment.
2. Radioactive materials naturally decay over time, so there is no need to keep them in special places.
3. Low-level waste is generated from hospitals and industry and is very dangerous and damaging.
4. Intermediate-level waste requires shielding but not cooling and includes rags, tools, clothing, filters, etc.
5. Low- and intermediate-level wastes are usually kept in shallow repositories, while high-level one is stored in geological repository.
6. High-level waste is produced by nuclear reactors and is very hazardous and often hot.
7. Almost all the radioactivity produced in the process of nuclear electricity generation is HLW.
8. The half-lives of radioactive elements differ from decades to millennia.

Ex.4.11. Match the sentences' halves.

- | | |
|---|---|
| 1) Radioactive waste is hazardous to... | a) ...which contain small amounts of mostly short-lived radioactivity. |
| 2) Radioactive materials naturally decay over time, so... | b) ...produced by nuclear reactors. |
| 3) Low-level wastes include materials... | c) ...all forms of life and the environment. |
| 4) Intermediate-level waste generally requires... | d) ...radioactive waste has to be isolated and confined in appropriate disposal facilities for a sufficient period. |
| 5) High-level waste is... | e) ...can differ quite extremely. |
| 6) The half-lives of radioactive elements... | f) ... shielding, but not cooling. |

Ex.4.12. Decide whether the following expressions refer to low-level waste (LLW), intermediate-level waste (ILW) or high-level waste (HLW).

Requires shielding, but not cooling; is generated from hospitals and industry; accounts for over 95 percent of the total radioactivity produced in the process of nuclear electricity generation; is buried in shallow repositories; has been shipped to other countries to be stored or reprocessed; is generated from the nuclear fuel cycle; contains higher amounts of radioactivity than LLW; is deposited in geological repository; includes resins, chemical sludge and metal nuclear fuel cladding; contains small amounts of mostly short-lived radioactivity; is produced by nuclear reactors; includes contaminated materials from reactor decommissioning; includes paper, rags, tools, clothing, filters, and others; may be solidified in concrete or bitumen for disposal; may be shipped back from other countries as active fuel.

Ex.4.13. Fill the gaps in these sentences with words from the box.

<i>factory resources dumping forests fumes waste</i>
--

1. There are strict laws about the disposal of nuclear
2. In big cities, two major sources of pollution are car exhaust ... and smoke from... chimneys.

3. It is very important that we look after natural ... such as water and gas.
4. We need to protect tropical ... such as the Amazon.
5. The company were fined for ... dangerous chemicals straight into the sea.

Ex.4.14. Read the text and decide whether the statements below are true or false.

Thermal Pollution

Thermal pollution is the degradation of water quality by any process that changes ambient water temperature. A common cause of thermal pollution is the use of water as a coolant by power plants and industrial manufacturers. When water used as a coolant is returned to the natural environment at a higher temperature, the sudden change in temperature decreases oxygen supply and affects ecosystem composition. Fish and other organisms adapted to particular temperature range can be killed by an abrupt change in water temperature (either a rapid increase or decrease) known as 'thermal shock'.

Elevated temperature typically decreases the level of dissolved oxygen in water, as gases are less soluble in hotter liquids. This can harm aquatic animals such as fish, amphibians and other aquatic organisms. Thermal pollution may also increase the metabolic rate of aquatic animals, as enzyme activity, resulting in these organisms consuming more food in a shorter time than if their environment were not changed. Besides, some fish species will avoid stream segments or coastal areas nearby a thermal discharge, so biodiversity can be decreased as a result.

High temperature limits oxygen dispersion into deeper waters, contributing to anaerobic conditions and increasing bacteria levels. Many aquatic species will fail to reproduce at elevated temperatures.

Primary producers (e.g. plants, cyanobacteria) are affected by warm water because higher water temperature increases plant growth rates, resulting in a shorter lifespan and species overpopulation. This can cause an algae bloom which reduces oxygen levels.

Temperature changes of even one to two degrees Celsius can cause significant changes in organism metabolism and other adverse cellular

biology effects. These cellular level effects can adversely affect mortality and reproduction.

In limited cases, warm water has little harmful effect and may even lead to improved function of the aquatic ecosystem. This phenomenon is seen especially in seasonal waters and is known as thermal enrichment. For example, the manatee often uses power plant discharge sites during winter. Projections suggest that manatee populations would decline upon the removal of these discharges.

1. Thermal pollution occurs when power plants and industrial manufacturers increase the temperature of the air around.

2. The higher the temperature of water is, the higher the amount of oxygen in it is.

3. Fish and other organisms are used to a particular temperature of the water and its change can cause a 'thermal shock'.

4. Thermal pollution can change eating habits of some aquatic animals.

5. The number of species of fish can decrease in some areas due to thermal pollution.

6. The more oxygen gets into deep waters, the higher bacteria level is.

7. The higher the temperature of the water is, the more algae can be found in the aquatic ecosystem.

8. Only significant changes in water temperature can affect flora and fauna of the aquatic ecosystem.

9. Sometimes thermal pollution contributes to improving habitat conditions of aquatic animals and fish.

Ex.4.15. Match the words with their definitions.

- | | |
|---------------|--|
| 1) coolant | a) sudden and unexpected |
| 2) soluble | b) increase the level of (something) |
| 3) dispersion | c) a liquid or gas that is used to remove heat from something |
| 4) mortality | d) (of a substance) able to be dissolved, especially in water |
| 5) abrupt | e) eat, drink, or ingest (food or drink) |
| 6) cellular | f) the action or process of distributing things or people over a wide area |

- | | |
|---------------|---|
| 7) elevate | g) the length of time for which a person or animal lives or a thing functions |
| 8) metabolism | h) death, especially on a large scale |
| 9) lifespan | i) relating to or consisting of living cells |
| 10) consume | j) the chemical processes that occur within a living organism in order to maintain life |

Ex.4.16. Find in the text above English equivalents to the following Ukrainian expressions.

Термальне забруднення, погіршення якості води, температура водного навколишнього середовища, загальна причина, охолоджуюча рідина, зменшує постачання кисню, впливає на склад екосистеми, пристосований до певного діапазону температури, різка зміна, швидке зростання або спадання, термальний шок, підвищена температура, розчинений кисень, водні тварини, швидкість метаболізму, активність ензиму, споживання більшої кількості їжі, види риб, прибережні райони, біорізноманіття, дисперсія кисню, анаеробні умови, рівень бактерій, менша тривалість життя, перенаселення, цвітіння водоростей, градусів за Цельсієм, значні зміни, метаболізм, несприятливі ефекти на рівні біологічних клітин, смертність і розмноження, термальне збагачення, популяції ламантинів.

Ex.4.17. Choose the best option to complete the sentences.

- In thermally polluted rivers and lakes the ... of water goes down.
a) purity b) quality c) amount
- Water from natural environment is used to ... power plants reactors.
a) cool b) heat c) clean
- When water used by a power plant is returned back to the natural environment at a higher temperature, the amount of oxygen in it ...
a) doesn't change b) increases c) decreases
- A sudden change in water temperature usually ... fish and other aquatic organisms.
a) kills b) supports c) doesn't affect
- Increased water temperature makes aquatic animals consume ... food.
a) some b) less c) more

6. In deep waters bacteria level increased due to ... of dissolved oxygen.

- a) absence b) lack c) redundancy

7. Warm water ... the number of growing plants.

- a) increases b) decreases c) doesn't change

8. Temperature changes of ... degrees Celsius can cause significant changes in aquatic organisms.

- a) 1–2 b) 11–12 c) 10–20

9. The manatee tries to ... power plant discharge sites during winter.

- a) avoid b) stay at c) escape from

Ex.4.18. Read the text and answer the questions below.

Noise Pollution

Noise pollution, also known as environmental noise or sound pollution, is the propagation of noise with harmful impact on the activity of human or animal life. The source of outdoor noise worldwide is mainly caused by machines and transport. Poor urban planning may give rise to noise pollution – side-by-side industrial and residential buildings can result in noise pollution in the residential areas. Some of the main sources of noise in residential areas include loud music, transportation noise, lawn care maintenance, nearby construction, or young people yelling (sports games). Noise pollution associated with household electricity generators is an emerging environmental degradation in many developing nations. Research suggests that noise pollution is the highest in low-income and racial minority neighborhoods.

High level noise can contribute to cardiovascular effects in humans and an increased incidence of coronary artery disease. In animals, noise can increase the risk of death by altering predator or prey detection and avoidance, interfere with reproduction and navigation, and contribute to permanent hearing loss.

While the elderly may have cardiac problems due to noise, according to the World Health Organization, children are especially vulnerable to noise, and the effects that noise has on children may be permanent. Noise poses a serious threat to a child's physical and psychological health, and may negatively interfere with a child's learning and behavior.

Humans

Noise pollution affects both health and behavior. Unwanted sound (noise) can damage physiological health. Noise pollution can cause hypertension, high stress levels, tinnitus, hearing loss, sleep disturbances, and other harmful effects.

Sound becomes unwanted when it either interferes with normal activities such as sleep or conversation, or disrupts or reduces one's quality of life. Noise-induced hearing loss can be caused by prolonged exposure to noise levels above 85 A-weighted decibels.

Noise exposure in the workplace can also contribute to noise-induced hearing loss and other health issues. Occupational hearing loss is one of the most common work-related illnesses worldwide.

Noise pollution, particularly sudden explosive noises as typified by high-performance car exhausts, poses a particular nuisance to adults and children on the autistic spectrum.

Wildlife

Noise can have an adverse effect on wild animals, increasing the risk of death by changing the delicate balance in predator or prey detection and avoidance, and interfering the use of the sounds in communication, especially in relation to reproduction and in navigation. These effects then may alter more interactions within a community through indirect ('domino') effects.

Noise pollution may have caused the death of certain species of whales that beached themselves after being exposed to the loud sound of military sonar.

Noise also makes species communicate more loudly, which is called Lombard vocal response. Scientists and researchers have conducted experiments that show whales' song length is longer when submarine-detectors are on. If creatures do not 'speak' loudly enough, their voice will be masked by anthropogenic sounds.

1. What is noise pollution?
2. What are the sources of noise contamination?
3. What are the effects of noise pollution in humans and animals?
4. Who is the most susceptible to high level noise?
5. What is the most common illness caused by noise pollution?

6. What is the role of noise pollution in wildlife relations?
7. Which military device makes whales beach themselves?
8. What did scientists and researchers discover in their experiments?

Ex.4.19. Match the words with their definitions.

- | | |
|----------------|---|
| 1) impact | a) relating or belonging to people who earn low wages |
| 2) residential | b) a machine which produces electricity |
| 3) pose | c) the smaller number or part, especially a number or part representing less than half of the whole |
| 4) low-income | d) a marked effect or influence |
| 5) length | e) designed for people to live in |
| 6) generator | f) present or constitute (a problem or danger) |
| 7) minority | g) cause someone to be vulnerable or at risk |
| 8) disrupt | h) susceptible to physical or emotional attack or harm |
| 9) vulnerable | i) interrupt (an event, activity, or process) by causing a disturbance or problem |
| 10) expose | j) the measurement or extent of something from end to end |

Ex.4.20. Use a linking word to complete the sentences.

<i>due to / because of / since / as / so / therefore / as a result / consequently / thus / that's why</i>

1. We live in overcrowded and noisy towns ... more and more people suffer from earaches and headaches.
2. Farmers spray toxic substances, ... the food we eat becomes contaminated.
3. Ships spill oil in the sea, ... fish and sea life die.
4. ... the fumes released by factories mix with the clouds the rain becomes more acidic.
5. ... car exhaust and gases children have breathing problems such as asthma.

Ex.4.21. Change the following sentences from active to passive

1. Household equipment produces noise pollution.
2. Air pollution decreases productivity.
3. Water pollution affects the flora and fauna of rivers.
4. Airplanes produce noise pollution.
5. Sewage pollutes the water.

Ex.4.22. Match the types of pollution with their effects.

- | | |
|-----------------------------------|------------------------------|
| 1) acid rain | a) skin cancer |
| 2) traffic congestion | b) cancer |
| 3) water contamination | c) hearing loss |
| 4) destruction of the ozone layer | d) stomach-related diseases |
| 5) air pollution | e) thermal shock |
| 6) noise pollution | f) carbon monoxide given off |
| 7) thermal pollution | g) respiratory problems |
| 8) radioactive pollution | h) forests dying |

Ex.4.23. Fill in the blanks with the words from the box.

disasterous waste destroyed pesticides extinct species

Every ten minutes one kind of animal, plant, or insect dies out forever. One million 1)... that still alive today will be 2)... in 20 years.

The oceans are in danger as well. They are filled with industrial and nuclear 3)... , fertilizers and 4)... . The Mediterranean sea is almost dead. Rio de Janeiro's coasts are fallowing. Tropical rain forests are being 5)... . Tijuca Forest may disappear in 20 years. The effect on the world's climate and on our agriculture will be 6)... . We must do something to protect the forests.

UNIT 5. GLOBAL WARMING

Key words

warming – потепління	magnitude – величина
climate change – зміна клімату	to enhance – збільшувати
to expect – очікувати	famine – голод
acidification – підкислення	marine – морський
sea level – рівень моря	to rescue – врятовувати
expansion – розширення	to collapse – руйнуватися
permafrost – вічна мерзлота	to hunt – полювати
drought – посуха	disastrous – катастрофічний
flood – повінь	oil slick – нафтова пляма
wildfire – лісова пожежа	accessible – доступний
to adapt – пристосовуватися	solution – рішення
latitude – широта	to be responsible for – бути
thermal – тепловий	відповідальним за
valuable – цінний	visible – видимий
absorption – поглинання	to distribute – розподіляти
infrared radiation – інфрачервоне	to reflect – відображати
випромінювання	

Ex.5.1. Read the text and answer the questions.

1. What is global warming?
2. What is the dominant cause of observed warming?
3. How do you understand the phenomenon of ‘anthropogenic climate change’?
4. What do future climate change effects include?
5. What are possible societal responses to global warming?

Global Warming

Global warming is a long-term rise in the average temperature of the Earth’s climate system, an aspect of climate change shown by temperature measurements and by multiple effects of the warming. The term commonly refers to the mainly human-caused observed warming since pre-industrial times and its projected continuation, though there were also much earlier periods of global warming. In the modern context the terms global warming and climate change are commonly

used interchangeably, but climate change includes both global warming and its effects, such as changes to precipitation and impacts that differ by region.

In 2013, the Intergovernmental Panel on Climate Change (IPCC) concluded, 'It is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century'. The largest human influence has been the emission of greenhouse gases such as carbon dioxide, methane, and nitrous oxide. In view of the dominant role of human activity in causing it, the phenomenon is sometimes called 'anthropogenic global warming' or 'anthropogenic climate change'.

Over the last century average global temperatures have increased by approximately one degree, while in Alaska, North-Western Canada and Eastern Russia it is believed average temperatures have increased by as much as three to four degrees. In the Northern Hemisphere, the spring now occurs nine days earlier and the winter freeze happens ten days later than it did 150 years ago and the last two decades have been the warmest ever recorded since the mid- 1800's.

Future climate change effects are expected to include rising sea levels, ocean acidification, regional changes in precipitation, and expansion of deserts in the subtropics. Future surface temperature increases are expected to be greater over land than over the oceans, and greatest in the Arctic, with the continuing retreat of glaciers, permafrost, and sea ice. Predicted regional precipitation effects include more frequent extreme weather events such as heat waves, droughts, wildfires, heavy rainfall with floods, and heavy snowfall. Effects directly significant to humans are predicted to include the threat to food security from decreasing crop yields, and the abandonment of populated areas due to rising sea levels. Environmental impacts appear likely to include the extinction or relocation of ecosystems as they adapt to climate change, with coral reefs, mountain ecosystems, and Arctic ecosystem most immediately threatened. Because the climate system has a large 'inertia' and greenhouse gases will remain in the atmosphere for a long time, climatic changes and their effects will continue to become more pronounced for many centuries even if further increases to greenhouse gases stop.

Possible societal responses to global warming include emissions reduction, adaptation to its effects, building systems resilient to its effects, and possible future climate engineering. Most countries are parties to the United Nations Framework Convention on Climate Change (UNFCCC), whose ultimate objective is to prevent dangerous anthropogenic climate change.

Ex.5.2. Decide whether the statements are true or false.

1. Human activity is considered to be the main cause of global warming.
2. The term global warming is wider than the term climate change.
3. The contribution to global warming of carbon dioxide, methane, and nitrous oxide emissions is insignificant.
4. The temperature worldwide is one degree higher now than it was a century ago.
5. In the Northern Hemisphere, the winter has become almost twenty days shorter.
6. Climate change may cause rising sea levels, ocean acidification, regional changes in precipitation, and expansion of deserts.
7. It's predicted that due to climate change in the future there will be a lot of extreme weather events but lack of food.
8. Climate change doesn't threaten the ecosystems with coral reefs, mountain ecosystems, and Arctic ecosystems.
9. If we stop increasing greenhouse gases in the atmosphere, climate will stop changing as well.

Ex.5.3. Match the words with their definitions.

- | | |
|---------------|---|
| 1) acidity | a) the action of becoming larger or more extensive |
| 2) permafrost | b) an extremely large mass of ice which moves very slowly, often down a mountain valley |
| 3) prevent | c) the level of acid in substances such as water or soil |
| 4) flood | d) a thick subsurface layer of soil that remains below freezing point throughout the year, occurring chiefly in polar regions |

- | | |
|--------------|--|
| 5) average | e) keep (something) from happening |
| 6) glacier | f) a fire that starts, usually by itself, in a wild area such as a forest, and spreads rapidly, causing great damage |
| 7) expansion | g) an overflow of a large amount of water beyond its normal limits, especially over what is normally dry land |
| 8) extreme | h) an amount, standard, level, or rate regarded as usual or ordinary |
| 9) wildfire | i) make (something) suitable for a new use or purpose |
| 10) adapt | j) reaching a high or the highest degree; very great |

Ex.5.4. Match nouns from column A with ones from column B to complete 'noun+noun' word combinations.

A	B
climate	dioxide
temperature	acidification
greenhouse	change
carbon	events
sea	reduction
ocean	waves
surface	measurements
weather	ecosystem
heat	level
mountain	temperature
emissions	gases

Ex.5.5. Complete the text with the words from the box.

*diseases burning change extinction (×2) emission
atmosphere coastal areas glaciers species ice
planet waves wildfires dioxide hurricanes coal*

Carbon dioxide and other gases warm the surface of the 1)... naturally by trapping solar heat in the 2)... . However, by burning fossil fuels such as 3)... , gas and oil and cutting down forests we have dramatically increased the amount of carbon 4)... in the Earth's

atmosphere and temperatures are rising. The largest contributing source of greenhouse gas is the 5)... of fossil fuels leading to the 6)... of carbon dioxide.

We can already see changes...

- the number of 7)... has almost doubled in the last 30 years;
- the flow of ice from 8)... in Greenland has more than doubled over the past decade;
- hundreds of 9)... of plants and animals are moving closer to the poles;
- climate 10)... in temperature and precipitation;
- deaths from 11)... will double in just 25 years – to 300,000 people a year;
- global sea levels could rise by more than 20 feet with the melting of glaciers, devastating 12)... worldwide;
- heat 13)... will become more intense;
- droughts and 14)... will occur more often;
- the Arctic Ocean could be 15)... free in summer by 2050;
- more than a million species worldwide could be driven to 16)... by 2050;
- some species are on the verge of 17)...

Ex.5.6. Read the text and answer the questions below.

Effects of Global Warming

If greenhouse warming occurs, it probably will not be distributed evenly around the globe. The greatest temperature changes are predicted to be at high latitudes and in the middle of continents. Siberia and the Canadian arctic might experience increases of 10° to 12 °C (18° to 22 °F). Chicago might go from an average of fifteen to forty-eight days each year above 32 °C (90 °F). Dallas may have 162 days per year that hot, rather than 100 as it does now. Calcutta, however, where the temperature is always hot, will not get much hotter.

Changing precipitation patterns might be one of the most serious consequences of the greenhouse effect. Some models predict that the midcontinents of North America, South America, and Asia will be significantly drier than they are now. This could have disastrous

effects on world food supplies. The other models don't agree on this point, however. While some show the American corn belt to be drier, others predict that it will be wetter than now. Model building is not yet an exact science.

Does anyone win in these scenarios? Countries with generally cold climates may benefit. Northern Canada, Siberia, and Scandinavia might benefit from longer growing seasons and more pleasant temperatures. More moisture in Mexico, the Sahel region of Africa, and Australia would also bring higher crop production. The social and economic consequences of losses elsewhere, however, might offset these gains.

Rising sea levels are among the most ominous potential results of global warming. Some oceanographers calculate that thermal expansion could raise sea level by one meter or more in the next century. An even worse scenario is that polar ice caps might melt. There is enough ice in the Arctic and Antarctica to raise the oceans by 30 meters (90 feet) if it all melts. Most of the world's major cities are on coasts only a few meters above sea level. The homes and businesses of about half the world's population would be threatened if the ice caps melt. A large amount of valuable farmland would also be lost. The U.S. Gulf Coast, for instance, would lose about 5,000 sq km, an area the size of Delaware. A few low-lying countries like the Maldives Islands in the Indian Ocean might disappear entirely.

A related concern is that global warming could cause an increase in violent storms. The area of ocean with warm enough surface water (above 27 °C or 81 °F) to generate hurricanes has expanded about 20 percent in the past twenty years. If this trend continues, climatic anomalies such as the 500-year flood in the Mississippi River basin in 1993 or the severe winter storms that struck much of the United States in 1994 could become more frequent. Insurance companies worry that \$2 trillion in insured property along U.S. coasts could be at risk from a combination of rising sea levels and increasingly catastrophic storms.

Many scientists are convinced that global climate change has already begun. They point to the fact that four out of the five warmest years on record were in the late 1980s and early 1990s. Others remain

skeptical, arguing that recent high temperatures could be just a random anomaly.

1. Where are the greatest temperature changes predicted to be?
2. What is supposed to be one of the most serious consequences of the greenhouse effect?
3. What do some models predict?
4. Which countries will benefit from longer growing season?
5. What will happen if ice caps melt?
6. Why will catastrophic storms become more frequent?
7. What are the opinions of scientists on global warming?

Ex.5.7. Complete the sentences according to the text above.

1. The greatest temperature changes are predicted to be at high latitudes and... .
2. Some models predict that the midcontinents of North America, South America, and Asia will be significantly ... than they are now.
3. Other models predict that the climate in North America will be ... than now.
4. Northern Canada, Siberia, and Scandinavia might benefit from ... and
5. Some oceanographers calculate that thermal expansion could raise ... by one meter or more in the next century.
6. Most of the world's major cities are ... only a few meters above sea level.
7. The area of ocean with warm enough surface water to generate hurricanes has expanded about ... in the past twenty years.
8. Many scientists are convinced that global climate change has

Ex.5.8. Find in the text above English equivalent to the following Ukrainian words and word combinations.

Розподілено рівномірно, високі широти, серйозні наслідки, запаси їжі, точна наука, користь, врожай, компенсувати, зростання рівня моря, крижаний покрив, повністю зникнути, бурхливі бурі, розширюватися, тенденція, переконаний.

Ex.5.9. Make the right choice to fill in the gaps in the sentences given below.

1. Global warming can ... a lot of damage to people and nature.
a) expect b) give c) cause d) take
2. Oceanographers say that lives of people would be ... in case ice caps melt.
a) killed b) saved c) changed d) threatened
3. Some countries of the world can ... from changing the climate.
a) benefit b) win c) ruin d) diversify
4. ... are the most destructive.
a) Violent storms b) Blizzards c) Heavy rains d) Hails
5. Some scientists are still ... about global climate change.
a) enthusiastic b) optimistic c) excited d) skeptical
6. The most ... results of global warming are rising sea levels.
a) wonderful b) ominous c) interesting d) accurate

Ex.5.10. Complete the text with the words from the box.

*number hottest undermines ever documented endless severe
in property damages extreme weather events*

Get ready for 1)... weather conditions, because 2020 may outdo 2019 when it comes to extreme weather records. This spring's prolonged heat wave gave us the 2)... March since record-keeping began back in 1895. And April 2019 marked the end of the warmest 12-month period 3)... in the US. Scientists tell us that our warming climate is causing more of these 4)... and warn that if we don't seek solutions to climate change, it could get much, much worse.

This 5)... cycle of wildfires, droughts, rainstorms and floods leaves a trail of death, injury and destruction that hurts communities, damages our health and 6)... our economy. Extreme weather events cost us billions 7)... each year. And when it comes to health related costs, the total 8)... increases by billions more. As temperatures continue to climb, these figures could rise, too.

Ex.5.11. Rewrite the following sentences so that they mean the same as the sentences given before.

1. Climate change is one of the most serious public health threats facing the nation, but few people are aware of it.

Although _____

2. Children, the elderly, and communities living in poverty are vulnerable to climate change related health problems.

Not only _____

3. Manmade sound waves can drown out the noises that marine mammals rely on to survive.

The noises _____

4. If carbon pollution continues, we will be facing hot days that occur ten times more often than they do now.

Unless _____

5. Millions of fish and other sea-related animals died because of oil spills in the last decade.

If _____

Ex.5.12. Read the text and answer the questions below.

Greenhouse Effect

The greenhouse effect is warming of the earth's surface and lower atmosphere (troposphere) caused by substances such as carbon dioxide and water vapour which let the sun's energy through to the ground but impede the passage of energy from the earth back into space.

Energy emitted from the sun ('solar radiation') is concentrated in a region of short wave lengths including visible light. Much of the short wave solar radiation travels down through the Earth's atmosphere to the surface virtually unimpeded. Some of the solar radiation is reflected straight back into space by clouds and by the earth's surface. Much of the solar radiation is absorbed at the earth's surface, causing the surface and the lower parts of the atmosphere to warm.

The warmed Earth emits radiation upwards, just as a hot stove or bar heater radiates energy. In the absence of any atmosphere, the upward radiation from the Earth would balance the incoming energy absorbed from the sun at a mean surface temperature of around -18°C ,

33 ° colder than the observed mean surface temperature of the Earth. The presence of greenhouse gases in the atmosphere accounts for the temperature difference. Heat radiation (infrared) emitted by the Earth is strongly absorbed by greenhouse gases in the atmosphere, such as water vapour, carbon dioxide and methane. Absorption of heat causes the atmosphere to warm and emit its own infrared radiation. The Earth's surface and lower atmosphere warm until they reach a temperature where the infra-red radiation emitted back into space, plus the directly reflected solar radiation, balance the absorbed energy coming in from the sun. As a result, the surface temperature of the globe is around 15 °C on average, 33 °C warmer than it would be if there were no atmosphere. This is called the *natural greenhouse effect*.

If extra amounts of greenhouse gases are added to the atmosphere, such as from human activities, then they will absorb more of the infra-red radiation. The Earth's surface and the lower atmosphere will warm further until a balance of incoming and outgoing radiation is reached again (the emission of infrared radiation increases as the temperature of the emitting body rises). This extra warming is called the *enhanced greenhouse effect*.

The magnitude of the enhanced greenhouse effect is influenced by various complex interactions in the earth-ocean-atmosphere system which haven't been mentioned above. For example, as the temperature of the earth's surface increases, more water vapour is evaporated. Since water vapour is itself a strong greenhouse gas, this is a positive feedback which will tend to amplify the warming effect of, for example, carbon dioxide emissions. Clouds tend both to cool the Earth because they reflect incoming sunlight, and to warm it by trapping outgoing infrared radiation. The net result over the globe of clouds is cooling, but it is still uncertain whether this overall cooling will increase or decrease as greenhouse gas concentrations increase. Heat is distributed vertically in the atmosphere by motion, turbulence and evaporation and condensation of moist air, as well as by the radioactive processes mentioned above.

Thus many processes and feedbacks must be accounted for in order to realistically predict climate changes resulting from particular greenhouse gas emission scenarios.

1. What is the greenhouse effect?
2. How is the sun's energy distributed when it reaches the Earth's surface?
3. What greenhouse gases have been mentioned in the text?
4. What is the role of the greenhouse gases in the greenhouse effect?
5. How does the atmosphere keep the temperature balance of the Earth?
6. What is the difference between the natural and enhanced greenhouse effects?
7. How do clouds contribute to the temperature balance of the earth's surface?

Ex.5.13. Decide whether the statements are true or false.

1. Greenhouse effect occurs because sun's energy is kept in the atmosphere by carbon dioxide and other substances.
2. All the solar radiation that reaches the earth's surface is absorbed by it.
3. Heated Earth emits infrared radiation back to space.
4. Water vapour, carbon dioxide and methane contribute greatly to keeping the natural temperature balance of earth.
5. If there were no atmosphere around the earth, the average surface temperature would be around 15 °C.
6. The more greenhouse gases in the atmosphere are, the higher the temperature of the earth's surface is.
7. The higher the temperature of the earth's surface is, the more water vapour evaporated is.
8. Clouds don't contribute to cooling the earth's surface.

Ex.5.14. Complete the table as shown in the example.

noun	adjective	verb
<i>radiation</i>	<i>radioactive</i>	<i>radiate</i>
water		
	warm	
vapor		
		effect
presence		

	—	emit
	various	
passage		
	moist	
		influence

Ex.5.15. Complete the text with the words from the box.

human activity, heated, space, alter, lead, Industrial Revolution, temperature, sun, phenomenon, absorbed, emission, carbon dioxide

The atmosphere allows most of the visible light from the 1)... to pass through and reach Earth's surface. As Earth's surface is heated by sunlight, it radiates part of this energy back toward 2)... as infrared radiation. This radiation, unlike visible light, tends to be 3)... by the greenhouse gases in the atmosphere, raising its 4)... . The 5)... atmosphere in turn radiates infrared radiation back toward Earth's surface.

Although the greenhouse effect is a naturally occurring 6)..., it is possible that the effect could be intensified by the 7)... of greenhouse gases into the atmosphere as the result of 8)... . From the beginning of the 9)... through the end of the 20th century, the amount of 10)... in the atmosphere increased by roughly 30 % and the amount of methane more than doubled. A number of scientists have predicted that human-related increases in atmospheric carbon dioxide and other greenhouse gases could 11)... to an increase in the global average temperature of 1–4 °C by the end of the 21st century. This global warming could 12)... Earth's climates and thereby produce new patterns and extremes of drought and rainfall and possibly disrupt food production in certain regions.

Ex.5.16. Put the sentences into correct order to describe the greenhouse effect.

A. The heated atmosphere in turn radiates infrared radiation back toward Earth's surface.

B. The sun's energy passes through the atmosphere and reaches the Earth's surface.

C. Infrared radiation emitted by the Earth's surface is absorbed by greenhouse gases in the atmosphere raising its temperature.

D. Eventually the temperature of the Earth's surface increases as well.

E. The sun emits visible light, UV and infrared radiation.

F. The Earth's surface is heated and emits infrared radiation back to space.

Ex.5.17. Choose correct options to complete the text. Match the questions below to the answers about climate change.

Climate Change

1. What is climate change?

2. What is the 'greenhouse effect'?

3. What is the evidence of global warming?

4. How will the weather change?

5. What is the international community doing?

A. Sea levels have risen by 10–20 cm. This is *due to / that's why* the expansion of warming oceans. Temperature records show that the average temperature has increased *on / by* about 0.6 °C in the 20th century.

B. The Kyoto Protocol (1997) commits industrialised countries *to / that* reduce their greenhouse gas emissions. It suffered a huge set back *on / in* 2001 when the USA, responsible *in / for* a quarter of global emissions, pulled out.

C. The planet's climate is constantly changing but now scientists believe *in / that* the extreme changes taking place today are a result of human activity. The changes we see today *must / may* affect the stability of the climate on which much life on the planet depends.

D. The term refers to the role played *with / by* the layer of gases, including carbon dioxide, methane and nitrous oxide, *which / who* trap the heat from the sun *in / at* the earth's atmosphere. We need the layer to keep in some of the heat but now the concentration of gases, especially CO₂ is increasing and retaining more heat.

E. It is difficult to predict, but we can expect more extreme weather conditions *as / like* floods, storms and heat waves. Scientists believe there will be more rain but also a higher risk of drought in inland areas.

Ex.5.18. Choose correct options to complete the text.

Too Hot to Handle

Imagine the world about two hundred years in the future. The cities of Shanghai, Tel Aviv and Houston are still there, but they are 1)... . Nobody lives there. What has 2)... ? Disease? A nuclear war? No, the answer is simpler than that – it is too hot. In fact, it is hot 3)... to kill anyone who stays outside during the day.

Heat waves – the periods when the weather is very hot for days or weeks – are very 4)... . In France, over 14,000 died from the heat in the summer of 2003. And in the USA, hurricanes, tornadoes and floods 5)... all the headlines in the news, but in fact, heat waves kill 6)... people than all those other natural disasters put together.

When it's very hot, our bodies keep cool by 7)... . This works best when the air is dry. Fortunately, the hottest places on earth are also the driest – 8)... , for example. But this may change with global warming. Two hundred years from now, many parts of the world may have very high temperatures and also a lot of water in the atmosphere, which will be very 9)... .

According to scientists, the only 10)... is to stop global warming. We can do this by 11)... the amount of carbon dioxide we put into the atmosphere. But if we don't reduce carbon emissions, many cities in the future will be too hot for 12)... .

- | | | |
|-----------------|----------------|--------------|
| 1. a) noisy | b) empty | c) crowded |
| 2. a) happened | b) done | c) been |
| 3. a) too | b) not enough | c) enough |
| 4. a) stressful | b) dangerous | c) demanding |
| 5. a) take | b) have | c) make |
| 6. a) many | b) less | c) more |
| 7. a) sweating | b) getting red | c) trembling |
| 8. a) forests | b) deserts | c) mountains |
| 9. a) simple | b) safe | c) dangerous |
| 10. a) solution | b) suggestion | c) decision |
| 11. a) keeping | b) increasing | c) reducing |
| 12. a) animals | b) humans | c) plants |

Ex.5.19. Decide whether the statements below are true or false according to the text in Ex.5.18.

1. About 200 years from now, some major cities might not have any inhabitants.
2. In France, the summer of 2003 was very hot.
3. In the USA, heat waves kill a lot of people, but other natural disasters kill more.
4. Heat waves are most dangerous for humans when the air is dry.
5. Global warming will make the atmosphere hotter and drier.
6. The best way to deal with the danger is to reduce carbon emissions.

Ex.5.20. Complete the text with the words from the box.

Polar Bears and Global Warming

become, hunt, fact, becomes, carbon dioxide, weighs, dependent, predator, born, general, sharp, called, believe, phenomenal, Arctic

Polar bears have a scientific name. It is *Ursus maritimus*. That's Latin for sea bear. Polar bears are 1)... the great white bear, ice bear, or nanook in different cultures. The polar bear is the largest kind of bears on Earth. They live in the 2)... They are used to winters when temperatures go down to 60 degrees below zero Celsius. Polar bears spend most of their time close to water. Zook is a kind of polar bear. It hunts and travels on the sea ice. It is a 3)... swimmer. It has a coat that keeps heat. Zook 4)... 1,000 pounds. In 5)... , fully grown males weigh between 880 and 1300 pounds. Fully grown females are approximately half that weight. They have 6)... , jagged teeth. They have enormous paws that they use like snowshoes on the ice. Polar bears are the largest 7)... in the Arctic water ecosystem. They need to eat about four pounds of fat a day. They 8)... seals by waiting for them even if they have to stay still for hours. When they can't find seals, they hunt walruses and seabirds. They eat from late April to mid July. When the ice is gone, polar bears usually fast. Some, though, move north in the summer to hunt.

Polar bear cubs are usually 9)... two at a time. When they are born, they weigh just over a pound. They typically remain with their mother for around 30 months, or two and a half years.

What's the problem then? Polar bears need the sea ice to survive. Instead, though, global warming may destroy their habitat. The sea ice in the Arctic in particular is melting earlier and earlier each year. Polar bears like Zook are completely 10)... on the sea ice. Without their habitat they are at risk of extinction. Zook in general lives in Western Hudson Bay in Canada. Scientists have documented thinner bears and fewer cubs in the area. In 11)... , the bears in Zook's region weigh 15 % less than three decades ago. Scientists believe that polar bears are losing about three weeks of feeding on the ice because of global warming. As the ice breaks up earlier, their prey 12)... less accessible. Scientists predict that the ice could completely melt from 2040 to 2100.

What can be done to prevent the sea ice habitat of the polar bears from disappearing? People need to use less fossil fuel. They need to switch to renewable resources instead. If 13)... levels continue to rise, scientists 14)... temperatures will rise, and sea ice will melt. The habitat of the polar bear will disappear. The population will decline significantly. Will they be the first mammals to lose their entire habitat because of global warming? Will polar bears like Zook 15)... extinct?

Ex.5.21. Choose the correct answer.

1. Ursus maritimus is Latin for... .
 - a) North Pole bear
 - b) Sea bear
 - c) Arctic
2. What temperature from given below is the most comfortable for polar bears?
 - a) -52°C
 - b) -72°C
 - c) $+2^{\circ}\text{C}$
3. Which is a fact?
 - a) We shouldn't worry about polar bears.
 - b) Polar bear cubs are usually born two at a time.
 - c) Polar bears are cute.
4. The polar bear is the smallest predator in the Arctic water ecosystem.
 - a) False
 - b) True

5. Which would be a beneficial activity to saving the polar bear?

- a) Driving electrical cars
- b) Reducing gas emissions
- c) Building factories

Ex.5.22. Match the environmental problems with their definitions.

- | | |
|-----------------------|---|
| 1) global warming | a) an oil spot that floats on the sea surface |
| 2) acid rain | b) a long dry period |
| 3) endangered species | c) presence of substance in the environment that makes it dirty and dangerous |
| 4) severe drought | d) increase in temperature of the Earth's atmosphere |
| 5) chemical pollution | e) rain that has been affected by chemical pollution |
| 6) oil slick | f) animals or plants that are close to extinction |

Ex.5.23. Complete these sentences with one of the phrases 1–6 in Ex.5.22.

1. Scientists say that unless ... is stopped, rising temperatures will cause disastrous floods in low-lying countries.

2. ... caused by pollution in the atmosphere has destroyed many trees in Northern Europe.

3. A lot of river wildlife has been killed by ... from factories and plants.

4. In 1998, a ... in Africa caused widespread famine.

5. Some ... such as the Iberian lynx, have been hunted almost to extinction.

6. The ... had a disastrous effect on seabirds and marine life.

Ex.5.24. Complete the following text with the correct word derived from the words in brackets.

An international panel of 1)... (*science*) has 2)... (*recent*) claimed that 3)... (*globe*) warming will cause temperatures to rise 4 degrees by 2100. 4)... (*environment*) groups 5)... (*immediate*) warned that this could have 6)... (*potential*) devastating results and called for 7)... (*urge*) action. The most likely effects of global warming are that

sea levels will rise, leading to many islands becoming submerged. Dry regions will probably get drier, which will 8)... (*serious*) increase the threat of famine, and weather patterns will change 9)... (*complete*) unless 10)... (*govern*) take coordinated action.

Ex.5.25. Choose best options (a, b, c, or d) to complete the text.

Global Warming

The Earth's climate is a very complicated system. What's more, it is now widely recognized that human activity is having an effect on it. The pollution which 1)... from the use of oil and coal in industry, 2)... the increased use of private cars, is causing significant changes in temperature in many parts of the world. These changes often have a knock-on effect on other aspects of the climate, 3)... to things like extreme weather 4)... and rising sea levels. Studying the changes which are taking 5)... and predicting those that are 6)... to happen in the future is now a major area of scientific research. The information which the scientists 7)... is very useful in helping governments to 8)... the effects of climate change and so be better prepared to 9)... with them.

A much more 10)... problem, however, is how to prevent the situation from 11)... worse. This depends on how quickly, and to what extent, the 12)... of pollution in the atmosphere increases. Although many countries have now agreed to try and limit the pollution they create, much more 13)... to be done. If no further action is 14)... , then temperatures are set to rise by about 0.2 % per decade 15)... the 21st century. Such a rate of warming is greater than anything that has occurred over the last ten thousand years.

- | | | | |
|-----------------|---------------|---------------|---------------|
| 1. a) recovers | b) concludes | c) results | d) happens |
| 2. a) as far as | b) as soon as | c) as long as | d) as well as |
| 3. a) leading | b) causing | c) finishing | d) producing |
| 4. a) examples | b) conditions | c) cases | d) instances |
| 5. a) point | b) part | c) path | d) place |
| 6. a) surely | b) probably | c) likely | d) possibly |
| 7. a) provide | b) progress | c) prove | d) propose |

- | | | | | |
|-----|-------------|---------------|---------------|------------|
| 8. | a) prevent | b) pretend | c) predict | d) prefer |
| 9. | a) handle | b) face | c) manage | d) cope |
| 10. | a) serious | b) determined | c) thoughtful | d) anxious |
| 11. | a) going | b) giving | c) getting | d) gaining |
| 12. | a) addition | b) amount | c) average | d) account |
| 13. | a) needs | b) wants | c) wishes | d) hopes |
| 14. | a) held | b) taken | c) made | d) carried |
| 15. | a) already | b) during | c) while | d) still |

UNIT 6. MAN-MADE ENVIRONMENTAL DISASTERS

Key words

accident – нещасний випадок

consequence – наслідок

oil tanker – нафтовий танкер

oil rig – нафтова вишка

devastating – руйнівний

to extract – добувати

dam – дамба

compared to – у порівнянні з

lead – свинець

mercury – ртуть

heavy metal – важкий метал

consumption – споживання

to injure – травмувати

starvation – голод

prosperity – процвітання

radioactive debris – радіоактивне сміття

turbine – турбіна

pump – насос

to conduct – проводити

surge – хвиля

explosion – вибух

irreversible – необоротний

biodegradable – такий, що

розкладається природним шляхом

to disturb – порушувати

vessel – судно

volatile – летючий

deforestation – вирубка лісу

ozone layer – озоновий шар

to shrink – пересихати

freshwater – прісноводний

to disappear – зникати

Ex.6.1. Read the text and answer the questions.

1. What is an environmental disaster?
2. What is the difference between a natural and environmental disaster?
3. What are the causes of environmental disasters?
4. What are the kinds of environmental disasters?

Environmental Disasters

Environmental disasters are defined as man-made damages to the natural environment that result in diseases and deaths of living beings, including plants, animals and humans. Environmental disasters are catastrophic events regarding the environment due to human activity. This distinguishes it from the concept of a natural disaster. Environmental disasters can be caused by technical accidents, human, technological or mechanical failure or carelessness. They can be

the consequence of long-term environmental pollution, such as the greenhouse effect or the destruction of the ozone layer.

Different kinds of accidents can cause diverse harmful incidents.

Nuclear disasters result from failures of nuclear plants or the usage of atomic bombs, whether for testing or attacking. Chemical disasters occur due to accidents in factories, during transporting, or they can be the side effects of mining, agricultural implementation, careless military activities. Oil spills are usually the consequences of leakages in oil tankers and offshore oil rigs on the ocean and have devastating effects onto oceanic life. Mining disasters can occur either from mining tunnels collapsing, burying the miners working underneath the earth, or by the spillage of hazardous chemicals employed for dissolving the minerals to be extracted. The collapse of architecture, buildings, bridges, or dams can also be followed by destructive consequences; e. g., breaking of dams can release enormous amount of water resulting in devastating flooding, or spillage of chemicals. Accidents in transportation, whether by airplane, ship, train or motorized vehicle can have disastrous effects, e.g., by the involvement of large numbers of passengers, by spilling huge amounts of oil or chemicals, or by causing fire, collapse of buildings or blockage of passage ways. Forest fires in arid areas can also be caused by human carelessness, e. g. leaving burning bonfires, cigarettes, etc.

Ex. 6.2. Match the kinds of environmental disasters with their causes.

- | | |
|--------------------------------|---|
| 1) nuclear disasters | a) mining tunnels collapsing |
| 2) chemical disasters | b) human carelessness and technical problems |
| 3) oil spills | c) leaving burning bonfires, cigarettes, etc. |
| 4) mining disasters | d) failures of nuclear plants or the usage of atomic bombs, whether for testing or attacking |
| 5) accidents in transportation | e) leakages in oil tankers and offshore oil rigs |
| 6) forest fires | f) accidents in factories, during transporting, agricultural implementation, careless military activities |

Ex.6.3. Read the text and answer the questions below.

Worst Man-Made Ecological Disasters

The oil spill in the Gulf of Mexico has quickly shot up to the top of the charts in terms of human-caused ecological disasters. Every week, the underwater leak gushed enough oil to mirror the Exxon Valdez of 1989. As it lasted for 94 days before being capped, it easily is one of the largest oil spills ever. It has caused a shutdown of 36 % of the entire Gulf of Mexico, which clocks in at about 87,000 square miles.

Despite all this, the disaster has still been relatively well-contained compared to others in years past. What follows are examples of ecological disasters that were either severely economically damaging, extremely lethal, or both.

One of the greatest losses of life that started with well-meaning roots was the Great Sparrow Campaign. It was known alternatively as the Kill a Sparrow Campaign or the Four Pests Campaign and it took place during the Great Leap Forward from 1958 to 1962. The four pests to be killed were rats, flies, mosquitoes, and sparrows, the latter being a challenge to agriculture because they ate seeds of grain. Mao Zedong initiated the campaign and asked Chinese citizens to kill and terrorize sparrows for the good of the harvest, which yielded greater crops for a time.

Unfortunately, the National Academy of Science discovered that sparrows might eat grain, but they eat dangerous crop-endangering pests far more. Due to the shortage in their number, locusts overtook them and ate everything in sight despite Mao's protestations for citizens to end their campaign. This led in turn to trigger the Great Chinese Famine, which led to the deaths of 30 million people of starvation. Although the campaign was meant to help, it ultimately led to the downfall and deaths of many.

Minamata disease sounds like a regular force of nature, as diseases often are. Plagues regularly sweep in and claim the lives of many, but this particular disease is actually caused by manmade activities. The Chisso Corporation near Minamata, Japan, opened in 1908 and became one of Japan's largest producers of acetaldehyde by 1932. Due to the prosperity of the plant, nearby Minamata prospered as well. This also created undue influence on the part of Chisso Corporation, which would factor later into serious conflicts of interest.

Local cats had been dying as of late after going into convulsions, acting erratic, and then dying. Locals had dubbed it the Dancing Cat Disease, because it appeared as though the cats would dance prior to their deaths. Unfortunately, it was soon not limited to cats and symptoms such as ataxia, numbness in the extremities, weakness, damaged hearing and speech, insanity, paralysis, coma, and even death appeared in humans as well. Due to Chisso's unfair leverage over Minamata, the disease went unchecked for nearly thirty years.

Minamata disease, as it turns out, was truly mercury poisoning. As a byproduct of acetaldehyde production, the wastewater from Chisso Corporation ended up containing high levels of lead, mercury, manganese, arsenic, and other heavy metals, all of which were hazardous for human consumption. Locals who ate fish from the bay upon which Minamata sat ended up becoming sick, especially the elderly and the very young. Due to joint pressure from Chisso and Japanese culture, it was determined to be shameful to accept compensation for being injured or killed by Chisso's negligent actions. To this day, payouts totaled a low \$11,000 per person at maximum, while many were unable to even obtain payment due to failing to be certified as having Minamata disease. Legal battles over loss of life and quality thereof rage on to this day.

The Bhopal Gas Tragedy is regarded as the world's worst industrial catastrophe of all time. A perfect storm of lack of government oversight, underfunded and underpaid workers, and sheer negligence and incompetence led to this horrifying disaster which ended up affecting over half a million people.

Union Carbide Corporation (now a Dow Chemical Company subsidiary) built a plant in Bhopal that was meant to produce pesticides for agricultural use. The plant apparently started off with poor management, with instruments being checked half the standard number of times per hour. Unlike similar plants built in the US, the Indian plant was not prepared for any sort of problems of this magnitude, including failure to notify local authorities of the nature of the dangerous chemicals being produced. Water hoses designed to bring down gas leaks—which in effect knock the gas down by

diluting them before they can get into the atmosphere—were found to spray water at a height of only 13 meters, which was inadequate for knocking gas down.

Up to the actual disaster, numerous workers died or were severely injured in an unusually high number of incidents that revealed managerial incompetence and a lack of training. In December of 1984, one of the tanks entered a runaway reaction that caused the venting of a vast amount of poisonous gas. To this day, similar to Minamata's issues with Chisso, the city and citizens of Bhopal are still battling Union Carbide and Dow in court.

The most dramatic example of both government incompetence and untrained workers leading to disaster remains the Chernobyl disaster. Displacing over 336,000 people permanently while leading to the evacuation of vast swaths of Ukraine, Belarus, and Russia, it remains one of the most destructive economic and ecological disasters. Nearby Pripyat, with a population of 50,000 at the time remained completely deserted and stands as it did on that day in 1986.

Thanks to the disaster, over 600,000 people were considered highly exposed and many will have higher cancer rates than normal people, although the disaster itself was largely a blow to Soviet Russia's pride and economically damaging to a growing prosperous region in Ukraine. Fewer than 50 direct deaths are actually attributable to the disaster, although radiation poisoning is among the most horrific and stunning ways to die.

All over the world countries that were capitalist or communist, monocultural or multicultural – all are susceptible to highly damaging disasters. The BP oil spill is not unique, but it certainly is a tragedy. Let us all hope that it is cleaned up soon, and that it ultimately causes less damage than these disasters did.

1. What are the worst manmade ecological disasters that are mentioned in the text?
2. Which of the disasters do you consider economically damaging or extremely lethal? Why?
3. What do you think can be done to improve the situation?

Ex.6.4. Decide if the statements are true or false. Correct the false one.

1. The oil spill in the Gulf of Mexico is one of the largest oil spills ever.
2. The main purpose of a Sparrow Campaign was to kill all the sparrows because they ate seeds and grain.
3. At that time China yielded greater crops.
4. Crop-endangering pests were flies, rats, hamsters and sparrows.
5. Locusts helped people to fight sparrows.
6. Minamata disease was a form of plagues.
7. The elderly and the very young suffered from Minamata disease.
8. About half a million people were exposed to radiation in Ukraine thanks to Chernobyl disaster.
9. All the disasters were the result of managerial incompetence and lack of training.

Ex.6.5. What are the disease symptoms that were mentioned in the text. Find them and translate.

Ex.6.6. Find in the text the names of heavy metals and translate them.

Ex.6.7. Explain the meaning of the following words and word combinations:

Oil spill, leak, gush, trigger, starvation, sweep in, prosperity, leverage, byproduct, hazardous, negligent, oversight, underfunded, underpaid, dilute, deserted, exposed, stunning, susceptible.

Ex.6.8. Fill in the gaps with words from the box.

<i>better upset ignorance creature polluted remedy devastating resources damage careless</i>
--

Man is a part of the environment, and has done more to 1)... the balance of nature during his short lifespan on earth than any other 2)... . He has done this by his 3)... , his greed, his folly, and his 4)... wastefulness.

He has poisoned the atmosphere and 5)... both land and water. He has used up the earth's natural 6)... with no thought for the future, and has invented the most 7)... ways of killing other people, animals, and plants at the same time.

Having caused so much 8)... , man should try to put matters right, if it is not already too late. If there is to be any 9)... for our illnesses, that remedy ultimately lies in the hands of the young and the sooner they start doing something about it, the 10)... .

Ex.6.9. Read the text and answer the questions below.

Chernobyl

What happened in Chernobyl?

On April 26, 1986, the world's worst nuclear accident happened at the Chernobyl plant near Pripyat, Ukraine, in the Soviet Union. A massive power surge attributable to poor design and mismanagement led to a series of explosions inside the fourth reactor at the Chernobyl nuclear power plant. The blasts managed to eviscerate the 2,000-tonne upper plate of the reactor and destroy its core.

According to the Organisation for Economic Cooperation and Development's Nuclear Energy Agency, the two explosions produced a shower of hot and highly radioactive debris. The resulting plume of radioactive smoke rose about one kilometre into the air and began to make its way across Europe. The plume drifted over extensive parts of the western Soviet Union (Ukraine, Belarus, and Russia), Austria, Sweden, Norway, Finland, Slovenia, Poland, Romania, Hungary, Switzerland, the Czech Republic, Italy, Bulgaria, the Republic of Moldova and Greece which were immediately contaminated by radiation. The World Nuclear Association says that during those 10 days, the world experienced the largest uncontrolled radioactive release in human history. The town was quickly evacuated but more than 30 years after the world's worst nuclear accident, experts still can't agree how many people it killed. The long-term impact of the radiation has proved impossible to quantify. Three decades ago, John Gittus of the Royal Academy of Engineering told the UK government there could eventually be around 10,000 fatalities.

Today, some – notably environmental groups – put the death toll well into six figures.

But how did it all happen?

On April 26, 1986, the Chernobyl operating crew was planning to test whether the turbines could produce sufficient energy to keep the coolant pumps running in the event of a loss of power until the emergency diesel generator was activated. To prevent any interruptions to the power of the reactor, the safety systems were deliberately switched off. To conduct the test, the reactor had to be powered down to 25 percent of its capacity. This procedure did not go according to plan and the reactor power level fell to less than 1 percent. The power therefore had to be slowly increased. But 30 seconds after the start of the test, there was an unexpected power surge. The reactor's emergency shutdown (which should have halted a chain reaction) failed.

The reactor's fuel elements ruptured and there was a violent explosion. The 1000-tonne sealing cap on the reactor building was blown off. At temperatures of over 2000 °C, the fuel rods melted. The graphite covering of the reactor then ignited. The graphite burned for nine days, churning huge quantities of radiation into the environment. The accident released more radiation than the deliberate dropping of a nuclear bomb on Hiroshima, Japan in August 1945.

The clean up

Initial attempts to extinguish the burning reactor involved fire fighters pouring cooling water into the reactor, but were abandoned after 10 hours. From 27 April to 5 May, more than 30 military helicopters flew over the burning reactor. They dropped 2400 tonnes of lead and 1800 tonnes of sand to try to smother the fire and absorb the radiation. These efforts were also unsuccessful. In fact they made the situation worse: heat accumulated beneath the dumped materials. The temperature in the reactor rose again, along with the quantity of radiation emerging from it. In the final phase of fire fighting, the core of the reactor was cooled with nitrogen. The fire and the radioactive emissions were finally under control on May 6.

Though it was extremely dangerous to people, there was need to involve them to extinguish the reactor. Not just a few, but thousands of people whose lives and health were sacrificed in vain attempts

to contain the disaster. These people were termed ‘liquidators’. The 600 men of the plant’s fire service and the operating crew were the most severely irradiated group. In this group 130 men were irradiated with doses equivalent to 650 years’ worth of a radiation worker’s annual limit. Thousands of military personnel and other workers were drafted in to move deadly radioactive material with little or no protection. As a result of the severe exposure to deadly radiation, 31 of those workers died shortly after the fire was put out. A total of between 600,000 and 800,000 men were involved in the clean-up operations in Chernobyl up to 1989. Of these men, 300,000 received radiation doses 500 times more the limit for the public over one year. Today, the ones who survive are still suffering from the irreversible damage to their health.

How many of them have died to date from the disaster is a controversial question. According to government agencies in the three former Soviet States affected, about 25,000 ‘liquidators’ have so far died.

1. When did the worst nuclear accident in Ukraine happen?
2. What was the Chernobyl operating crew going to test on April, 26, 1986?
3. Why were the safety systems switched off?
4. What happened to the fuel rods and the graphite covering of the reactor?
5. What did military helicopters do to extinguish the burning reactor?
6. Why were their efforts unsuccessful?
7. When the fire and the radioactive emissions were under control?
8. How many men were involved in the clean-up operations in Chernobyl up to 1989?

Ex.6.10. Decide whether the statements are true or false.

1. On April 26, 1986, a single explosion inside the fourth reactor at the Chernobyl nuclear power plant resulted in one of the world’s worst environmental disasters.
2. A lot of European countries were immediately contaminated by radiation.

3. It's impossible to count the death toll in the accident because radiation contamination has a prolonged effect.

4. The accident happened when the operating crew were testing the fourth reactor.

5. The safety systems were switched off by accident.

6. During the test, the reactor power level fell down to 25 percent instead of planned 1 percent.

7. The amounts of radiation released in the accident at Chernobyl nuclear power plant and the deliberate dropping of a nuclear bomb on Hiroshima, Japan in August 1945 is approximately equal.

8. Thousands of people were trying to extinguish the burning reactor during about 10 days.

9. Hundreds of people received radiation doses 500 times more the limit for the public over one year.

Ex.6.11. Match the words with their definitions.

- | | |
|--------------|---|
| 1) explosion | a) organize and carry out |
| 2) debris | b) the central part of a nuclear reactor, which contains the fissile material |
| 3) conduct | c) a violent and destructive shattering or blowing apart of something, as is caused by a bomb |
| 4) core | d) a closure of a factory or system, typically a temporary closure due to a fault or for maintenance |
| 5) fuel rod | e) the maximum amount that something can contain |
| 6) turbine | f) a sudden large increase in something that has previously been steady |
| 7) ignite | g) scattered pieces of rubbish or remains |
| 8) surge | h) a machine or engine which uses a stream of air, gas, water, or steam to turn a wheel and produce power |
| 9) capacity | i) catch fire or cause to catch fire |
| 10) shutdown | j) a rod-shaped fuel element in a nuclear reactor |

Ex.6.12. Fill in the gaps using the words from the box.

stability, liquidators, thyroid, nuclear, accident, radioactive, fuel, surge, graphite, nitrogen, toll, respiratory, history, people, helicopters, Hiroshima, concrete, quantity, deadly, cancer, irradiated, reactor, sarcophagus, roof

1. On April 26, 1986, the world's worst ... accident happened at the Chernobyl plant.

2. 30 seconds after the start of a safety test in Chernobyl, there was an unexpected power

3. The ... covering of the reactor burned for nine days, churning huge quantities of radiation into the atmosphere.

4. The resulting plume of ... smoke rose about one kilometre into the air.

5. In the final phase of fire fighting, the core of the reactor was cooled with...

6. Despite the obvious dangers the response to the disaster needed

7. Initial attempts to extinguish the burning reactor involved firefighters pouring cooling water into the

8. The 600 men of the plant's service and the operating crew were the most severely ... group.

9. From 27 April to 5 May, more than 30 military ... flew over the burning reactor.

10. Thousands of military personnel and other workers were drafted in to move ... radioactive material.

11. The people who worked to contain the Chernobyl disaster were termed... .

12. Following the explosion, a massive concrete ... was constructed around the damaged no. 4 Reactor.

13. The sarcophagus containing the reactor contains more than 7,000 tonnes of steel and 410,000 of

14. The greatest problem with the sarcophagus was its lack of

15. Water is leaking through the sarcophagus via holes in its

16. There is no certainty as to how much ... has been left inside the reactor.

17. The accident released more radiation than the deliberate dropping of a nuclear bomb on

18. The long-term impact of the radiation has proved impossible to

19. There is a lot of confusion about how many excess ... deaths will likely result from the Chernobyl accident.

20. More than 30 years after the world's worst nuclear ... , experts still can't agree how many people it killed.

21. Chernobyl's second generation now suffers from birth defects ... problems, cancer and other conditions.

22. An increased risk of ... cancer in exposed children has been clearly demonstrated in the most contaminated regions.

23. A study estimates that by 2065, Chernobyl will lead to a total death ... of between 30,000 and 60,000 people.

24. The World Nuclear Association says Chernobyl is responsible for the largest uncontrolled radioactive release in human

Ex.6.13. Read the text and choose the best heading (A–G) to each part (1–6). There is one extra heading you don't need.

A. Causes of the Accident

B. Gas Extension

C. Post-Leakage Scene

D. Government Reaction

E. Victims of the Bhopal disaster

F. The World's Worst Industrial Disaster

G. Chemicals killing people

Bhopal Disaster

1. _____

The Bhopal disaster, also known as the Bhopal gas tragedy, was a poisonous gas leak incident on the night of 2–3 December, 1984 at the Union Carbide India Limited (UCIL) pesticide plant in Bhopal, Madhya Pradesh, India. It is considered to be the world's worst industrial disaster. Over 500,000 people were exposed to methyl isocyanate (MIC) gas. The highly toxic substance made its way into and around the small towns located near the plant.

2. _____

Estimates vary on the death toll. The official immediate death toll was 2,259. The government of Madhya Pradesh confirmed a total of 3,787 deaths related to the gas release. A government affidavit in 2006 stated that the leak caused 558,125 injuries, including 38,478 temporary partial injuries and approximately 3,900 severely and permanently disabling injuries. Others estimate that 8,000 died within two weeks, and another 8,000 or more have since died from gas-related diseases.

3. _____

The gas leak in the Union Carbide was reported after midnight on the night of December 2-3. The accident took place at the Plant Number C of the Union Carbide factory in Bhopal. As the cool morning breeze picked up pace, it carried the poisonous gas leaking from the Union Carbide factory to rest of the town killing people – both awake and asleep. As per government's affidavit, about 3,000 people died of poisonous gas within a few hours of the incident.

4. _____

It is estimated that about 40 tonnes of methyl isocyanate (MIC) gas and other chemicals leaked from the Union Carbide factory. Methyl isocyanate is extremely toxic and if its concentration in air touches 21ppm (parts per million), it can cause death within minutes of inhaling the gas. In Bhopal, the level was multiple times higher.

5. _____

The leakage of gas was reported from Plant Number C. As per official record, methyl isocyanate got mixed with water used for cooling the plant. The mixture led to generation of volumes of gases, which put tremendous pressure on Tank Number 610. The tank cover gave way to building gaseous pressure releasing about 40 tonnes of the poisonous gas, which diffused over a large area. The alarm system of the Union Carbide didn't work, so thousands of people were exposed to the leakage of methyl isocyanate gas.

6. _____

In the morning on December 3, thousands of people were found dead in their beds, others were running to hospitals complaining about having dizziness, skin irritation and rashes, a lot of them reported sudden blindness. Thousands of people were suffering, finding it difficult to breathe. Doctors of Bhopal had no experience in dealing

with industrial disasters and weren't aware of the symptoms of methyl isocyanate poisoning. The gas caused internal hemorrhage, pneumonia and eventually death. The villages and slums in the neighbouring areas of the factory were the worst affected.

Officially, the government declared that the gas leakage was contained in eight hours, but its consequences are still present in the town.

Ex. 6.14. Answer the questions to the text above.

1. Why is the Bhopal disaster considered to be the world's worst industrial disaster?
2. How many people were injured in the incident?
3. How did the weather conditions contribute to the gas spread around the area?
4. What kind of gas was released at the Union Carbide India Limited (UCIL) pesticide plant in Bhopal?
5. What caused the gas leakage?
6. What health problems related to the gas leakage did the people have?
7. Why couldn't the doctors help the injured immediately?

Ex. 6.15. Match the words with their definitions.

- | | |
|----------------|--|
| 1) leakage | a) to guess or calculate the cost, size, value, etc. of something |
| 2) incident | b) a written statement that someone makes after promising officially to tell the truth |
| 3) estimate | c) not lasting for very long |
| 4) death toll | d) to breathe air, smoke, or gas into your lungs |
| 5) affidavit | e) a very poor and crowded area, especially of a city |
| 6) temporary | f) a situation in which a liquid or gas escapes from an opening in a pipe or container |
| 7) permanently | g) the condition of being unable to see |
| 8) inhale | h) an event that is either unpleasant or unusual |
| 9) blindness | i) in a way that lasts or remains unchanged indefinitely |
| 10) slums | j) the number of people who die because of an event such as a war or an accident |

Ex.6.16. Match the words to complete word combinations from the text above.

gas	substance
industrial	affidavit
toxic	injuries
death	irritation
government	leak
temporary partial	hemorrhage
methyl	pressure
tremendous	disaster
skin	toll
internal	isocyanate

Ex.6.17. Find in the text above English equivalents to the following Ukrainian words and expressions.

Витік газу; найстрашніша промислова катастрофа у світі; метилу ізоціанат; високотоксична речовина; оцінка; список загиблих; офіційна заява уряду; тимчасові часткові пошкодження; приблизно; ушкодження; що ведуть до інвалідності; які спали й не спали; вдихання газу; в декілька разів вище; суміш; величезний тиск; розсіюватися на великій території; сигналізація; подразнення шкіри і висипання; раптова сліпота; важко дихати; обізнаний; внутрішні кровотечі; запалення легенів; нетрі.

Ex.6.18. Read the text and answer the questions below.

Great Pacific Garbage Patch

The Great Pacific Garbage Patch is an accumulation of marine debris in the North Pacific Ocean. Marine debris is litter that ends up in oceans, seas, and other large bodies of water.

The Great Pacific Garbage Patch, also known as the Pacific trash vortex, spans waters from the West Coast of North America to Japan. The patch is actually comprised of the Western Garbage Patch, located near Japan, and the Eastern Garbage Patch, located between the U.S. states of Hawaii and California. The patch covers the area of approximately 1.6 million square kilometers which is twice more than Taxes state in the USA.

The entire Great Pacific Garbage Patch is bounded by the North Pacific Subtropical Gyre. An ocean gyre is a system of circular ocean currents formed by the Earth's wind patterns and the forces created by the rotation of the planet. The North Pacific Subtropical Gyre is created by the interaction of the California, North Equatorial, Kuroshiro, and North Pacific currents. These four currents move in a clockwise direction around an area of 20 million square kilometers.

The area in the center of a gyre tends to be very calm and stable. The circular motion of the gyre draws debris into this stable center, where it becomes trapped. A plastic water bottle discarded off the coast of California, for instance, takes the California Current south toward Mexico. There, it may catch the North Equatorial Current, which crosses the vast Pacific. Near the coast of Japan, the bottle may travel north on the powerful Kuroshiro Current. Finally, the bottle travels westward on the North Pacific Current. The gently rolling vortexes of the Eastern and Western Garbage Patches gradually draw in the bottle.

The amount of debris in the Great Pacific Garbage Patch accumulates because much of it is not biodegradable. Many plastics, for instance, do not wear down; they simply break into tinier and tinier pieces.

The seafloor beneath the Great Pacific Garbage Patch may also be an underwater trash heap. Oceanographers and ecologists recently discovered that about 70 % of marine debris actually sinks to the bottom of the ocean.

No one knows how much debris makes up the Great Pacific Garbage Patch. The North Pacific Subtropical Gyre is too large for scientists to trawl. In addition, not all trash floats on the surface. Denser debris can sink centimeters or even several meters beneath the surface, making the vortex's area nearly impossible to measure.

About 80 % of the debris in the Great Pacific Garbage Patch comes from land-based activities in North America and Asia. Trash from the coast of North America takes about six years to reach the Great Pacific Garbage Patch, while trash from Japan and other Asian countries takes about a year.

The remaining 20 % of debris in the Great Pacific Garbage Patch comes from boaters, offshore oil rigs, and large cargo ships that dump or lose debris directly into the water. The majority of this debris – about 79,000 tons – is fishing nets. More unusual items, such as computer monitors and LEGOs, come from dropped shipping containers.

Marine debris can be very harmful to marine life in the gyre. For instance, loggerhead sea turtles often mistake plastic bags for jellies, their favourite food. Albatrosses mistake plastic resin pellets for fish eggs and feed them to chicks, which die of starvation or ruptured organs.

Seals and other marine mammals are especially at risk. They can get entangled in abandoned plastic fishing nets, which are being discarded more often because of their low cost.

Marine debris can also disturb marine food webs in the North Pacific Subtropical Gyre. As microplastics and other trash collect on or near the surface of the ocean, they block sunlight from reaching plankton and algae below. Algae and plankton are the most common autotrophs, or producers, in the marine food web. Autotrophs are organisms that can produce their own nutrients from oxygen, carbon, and sunlight.

If algae and plankton communities are threatened, the entire food web may change. Animals that feed on algae and plankton, such as fish and turtles, will have less food. If populations of those animals decrease, there will be less food for apex predators such as tuna, sharks, and whales. Eventually, seafood becomes less available and more expensive for people.

1. What is the Great Pacific Garbage Patch?
2. Where is it situated?
3. How has it been forming?
4. What does the Great Pacific Garbage Patch consist of?
5. Why is it difficult to estimate the size of the Great Pacific Garbage Patch?
6. Where does the debris come from?
7. How long does it take debris to get into the Great Pacific Garbage Patch?
8. How does the Great Pacific Garbage Patch affect the marine life under it?

Ex.6.19. Decide whether the statements are true or false?

1. The Great Pacific Garbage Patch is a natural island located between Hawaii and California.

2. The Great Pacific Garbage Patch is formed due to the circular currents of the ocean.

3. Almost all the debris in the Great Pacific Garbage Patch can't decay naturally.

4. Less than a half of the debris goes down and accumulates on the bottom.

5. It's impossible to measure the amount of debris in the Great Pacific Garbage Patch because it's always in motion.

6. About four fifths of the debris in the Great Pacific Garbage Patch comes from mainlands; the rest comes from boaters, offshore oil rigs, and large cargo ships.

7. Marine debris is very harmful to all the marine life in the gyre.

8. The debris in the Great Pacific Garbage Patch is an important part of the food chain of the area.

Ex.6.20. Match the words with their definitions.

- | | |
|------------------|---|
| 1) patch | a) away from or at a distance from the coast |
| 2) debris | b) to put down or drop something in a careless way |
| 3) gyre | c) a small area that is different in some way from the area that surrounds it |
| 4) vortex | d) able to decay naturally and in a way that is not harmful |
| 5) heap | e) the state of having no food for a long period, often causing death |
| 6) biodegradable | f) a mass of air or water that spins around very fast and pulls objects into its empty centre |
| 7) sink | g) a circular pattern of ocean currents (flows of water in a particular direction) |
| 8) dump | h) to go down below the surface or to the bottom of a liquid or soft substance |
| 9) offshore | i) broken or torn pieces of something larger |
| 10) starvation | j) an untidy pile or mass of things |

Ex.6.21. Complete the text with the words from the box.

wrap, toss, injured, gear, seals, traps, painful, abandoned, fishermen, drown, dump, captured, approximately, collide, surface

‘Ghost Nets’ are Killing Thousands of Animals Every Year

More than 650,000 marine animals, including dolphins, whales, 1)... and turtles, are killed or 2)... in fishing nets each year. In many cases, animals get caught and die in nets that are being actively used by 3)... For instance, thousands of dolphins are accidentally 4)... as by-catch in trawling nets off the coast of France every year – most, if not all, of these dolphins die, and the fishermen simply 5)... their bodies overboard.

Yet lost, discarded and 6)... fishing nets – referred to as ‘ghost nets’ – cause just as much damage, killing hundreds upon thousands of marine animals.

7)... 640,000 tons of fishing gear are left in the oceans every year. In some cases, illegal fishermen may deliberately 8)... their nets into the ocean to avoid getting caught. But most fishing vessels operating legally simply lose their 8)... due to poor weather, or because their nets 9)... with boat propellers, rocks or other fishing vessels.

Left in the ocean, ‘ghost nets’ become death 10)... for almost any animal they come into contact with. The nets may 11)... themselves around the animal’s body, and, in the case of a mammal or turtle, prevent the animal from returning to the 12)... to get air, causing them to slowly 13)... If the animal does manage to swim away with the nets still attached to him, the nets can cause 14)... injuries.

Ex.6.22. Read the article and decide if the statements below are true or false.

Hawaii Hit by Great Garbage Patch

April 26, 2010

A recent discovery shows the world now has two ocean garbage patches. These are huge areas of the ocean which have a huge floating island of trash and litter. The first garbage patch was discovered in the Pacific by ocean researcher Charles Moore in 1997. The new one was found in the Atlantic by a husband and wife team Anna Cummins and Marcus Eriksen. ‘We found the Great Atlantic Garbage Patch’,

said Ms Cummins. ‘Our job now is to let people know that plastic ocean pollution is a global problem. Unfortunately, it is not confined to a single patch’, she added. Ms Cummins described her sadness at what humans are doing to the ocean: ‘It’s shocking to see it firsthand... We’ve managed to leave our footprint really everywhere’.

The BBC has just reported on the damage the Great Pacific Garbage Patch is doing. Tons of plastic is washing up on the beaches of Hawaii. This island chain is world famous for having some of the world’s most beautiful beaches. The very name ‘Hawaii’ conjures up images of paradise islands. No longer. The BBC’s presenter Simon Reeve says Kamilo Beach on the island of Hawaii has been described as ‘the world’s dirtiest beach’. He went on a tour of the remote beach with a local conservationist. They analysed what was on the beach and found more plastic particles than grains of sand. A Wikipedia search confirms the beach’s new status. The website says, ‘it is known for its accumulation of plastic marine debris from the Great Pacific Garbage Patch’.

1. Scientists have discovered Hawaiians use plastic in their gardens.
2. The garbage patches do not move and look to be permanent.
3. The world’s first ocean garbage patch was found in the Indian Ocean.
4. A garbage patch discoverer encouraged people to leave footprints.
5. People are washing tons of plastic bottles on Hawaii’s beaches.
6. The article says the word ‘Hawaii’ makes you think of paradise.
7. An analysis of a Hawaiian beach found more plastic than sand.
8. Wikipedia says Kamilo Beach is best known for marine life.

Ex.6.23. Match the following synonyms from the article above.

- | | |
|---------------|---------------|
| 1) discovery | a) rubbish |
| 2) huge | b) prove |
| 3) trash | c) harm |
| 4) single | d) create |
| 5) firsthand | e) enormous |
| 6) damage | f) sea |
| 7) conjure up | g) unearthing |
| 8) remote | h) in person |
| 9) confirm | i) isolated |
| 10) marine | j) sole |

Ex.6.24. Match the phrases halves. Sometimes more than one choice is possible.

- | | |
|------------------------------------|--------------------------|
| 1) the world now has two | a) to a single patch |
| 2) a huge floating island of trash | b) up on the beaches |
| 3) plastic ocean pollution is | c) and litter |
| 4) it is not confined | d) firsthand |
| 5) It's shocking to see it | e) images of paradise |
| 6) tons of plastic is washing | f) a global problem |
| 7) 'Hawaii' conjures up | g) plastic marine debris |
| 8) He went on a tour | h) ocean garbage patches |
| 9) more plastic particles than | i) of the remote beach |
| 10) known for its accumulation of | j) grains of sand |

Ex.6.25. Retell the article above using the following Key words.

Recent discovery / garbage patches / islands / plastic / pollution / shocking / footprint / beaches / paradise / tours / conservationists / sand / Wikipedia / Pacific Ocean.

Ex.6.26. Read the text and answer the questions below.

Deepwater Horizon Oil Spill

On April 20, 2010, the oil drilling rig Deepwater Horizon, operating in the Macondo Prospect in the Gulf of Mexico about 40 miles (60 km) southeast of the Louisiana coast, exploded and sank resulting in the largest oil spill in the history of marine oil drilling operations. A surge of natural gas blasted through a concrete core recently installed in order to seal the well for later use. Once released by the fracture of the core, the natural gas traveled up the Deepwater Horizon rig's riser to the platform, where it ignited, killing 11 workers and injuring 17. The rig capsized and sank on the morning of April 22. 4 million barrels of oil flowed from the damaged Macondo well over an 87-day period, before it was finally capped on July 15, 2010.

Since the Deepwater Horizon oil rig exploded on April 20th an estimated 5,000 barrels of oil a day have been gushing into the seas of the Gulf of Mexico and drifting towards the US coast threatening wildlife and livelihoods dependent on tourism and fishing.

Out on the water, it starts as a rainbow shimmer, then turns to wide orange streamers of oil whipping through the waves. On the beach, we witness a vast swimming pool of dark chocolaty syrup left behind at low tide, and thick dark patches of crude bubbling on the sand. The smell of oil on the beach is so strong that it burns your nostrils, and leaves you feeling dizzy even after a few minutes away from it.

According to Rick Steiner, 57, a marine biologist from the University of Alaska and a veteran of America's last oil spill disaster, the Exxon Valdez, this is the most volatile and toxic form of crude oil in the waters and lapping on to the beaches of Grand Isle, the area at the heart of the slowly unfolding environmental apocalypse that has engulfed Louisiana, and is now moving eastwards, threatening Mississippi, Alabama, and the Florida Panhandle.

Fifty-three days after BP's ruptured well began sweeping crude oil, the wholesale slaughter of dolphins, pelicans, hermit crab and other marine life is only now becoming readily visible to humans.

Steiner says he is in the Gulf of Mexico to 'bear witness' and he has been tackling the beaches and the waters gathering evidence.

The first casualties appear around Barataria Pass, prime feeding ground for bottlenose dolphins. Several appear, swimming, eating, even mating in waters crossed by wide burnt-orange streamers of oil, thus at risk of absorbing toxins.

'They get it in their eyes. They get it in the fish they eat and it is also possible when they come to the surface and open their blowhole to breathe that they are inhaling some of it', Steiner says.

Steiner and the Greenpeace crew intend to make a haven for brown pelicans out of Queen Bess Island. These birds, until recently, were on the federal government's list of endangered species and were doing OK – but now that recovery appears to have been abruptly reversed.

A dark tide line of oil enriches the island, and has crept into the marsh grasses, where the pelican nest. Most of the adult birds had patches of oil on their chest feathers. 'Nearly all are doomed', says Steiner, if not now, then, in some point in the future. The risks here to birds are not just acute mortality right here right now', he continues. 'There is mortality we won't see for a month or two months, or even a year'.

He points out a pelican standing so still it looks like it's been made out of a slab of chocolate, another frantically flapping its spread wings to try to stake off the oil, and then another maniacally pecking at the spots on its chest. He could be a candidate for cleaning, and he may survive', Seiner says. 'He obviously won't if he's not cleaned'.

'This is just the start. It is going to keep coming even if they shut the damn thing off today'.

1. Why is the oil leak potentially harmful for life in the Gulf of Mexico?
2. What are the consequences of the smell of oil on people's health?
3. Why are the bottlenose dolphins at risk?
4. What does the last quotation of the text 'This is just the start. It is going to keep coming even if they shut the damn thing off today'. mean?

Ex.6.27. Decide whether the statements are true or false?

1. Both the seas and the sand on the beaches are clear evidence of the environmental catastrophe.
2. The environmental disaster caused by the oil spill from the Exxon Valdez was worse than the one the Deepwater Horizon is causing.
3. Steiner has been talking to people to understand what has happened in the region.
4. Although dolphins continue to swim calmly, they are being victims of the environmental apocalypse.

Ex.6.28. Go through the text (paragraphs 1–4) and find synonyms for the word or expressions given below.

Platform; flowing quickly in large quantities; job or source of income; total destruction and end of the world.

Ex.6.29. Complete the sentences with the words from the box.
habitats, global warming, oil spills, drought, acid rain, deforestation,
pollution, ozone layer, rainforests, natural resources,
endangered species, exhaust fumes

- 1) In April 2010 an explosion on the oil rig Deepwater Horizon caused a devastating fire. Two days later the rig sank causing one of the most devastating ... ever.

- 2) ... are the lungs of the Earth.
- 3) ... contains harmful chemicals that damage trees, crops and buildings.
- 4) One of the goals of WWF is to protect ... like the panda and the polar bear.
- 5) Air, water and wood are examples of
- 6) The ... protects all life from the sun's harmful radiation.
- 7) Climate change is a tremendous threat to polar bear ... and to their survival.
- 8) Car ... are extremely harmful to our eyes and lungs.
- 9) If ... continues on this scale, the icecaps will melt and the sea level will rise.
- 10) People who live in industrialized areas face an elevated risk of developing serious diseases due to the high level of
- 11) ... in the Amazon rainforest region has led to the extinction of species.
- 12) Millions of people in Africa face starvation as a result of the

Ex. 6.30. Rewrite these sentences using the words given below. Keep the same meaning.

1. Many sea birds died because the 'Deepwater Horizon' platform exploded on 20th of April. Fish died as well.
Both...
2. Scientists have to understand what has happened in the Gulf of Mexico and make sure it doesn't happen again.
Scientists have to not only...
3. Rick Steiner was trying to save as many animals as he could. He is a marine biologist.
Rick Steiner, a ...
4. BP hasn't been able to stop the leak. Authorities haven't had much success either.
Neither...
5. A Greenpeace team is monitoring the waters around Queen Bess Island every morning.
The waters...

Ex.6.31. Read the text and choose the best heading (A–G) to each part (1–5). There are two extra headings you don't need.

- A. The Western Sea Seems to Have a Poor Future
- B. Naval History
- C. Destruction of the Aral Sea
- D. Climate and Hydrology
- E. Environmental Catastrophe
- F. Irrigation Canals
- G. Restoring the Northern Aral Sea

Shrinking of the Aral Sea

The Aral Sea lying between Kazakhstan in the north and Uzbekistan in the south was once the fourth largest lake in the world. It produced thousands of tons of fish for the local economy annually. Since the 1960s, however, the Aral Sea has been shrinking.

1. _____

In the 1920s, the Soviet Union turned lands of the Uzbek SSR into cotton plantations and ordered the construction of irrigation canals to provide water to the crops in the middle of the plateau of the region. These hand-dug, irrigation canals moved water from the Amu Darya and Syr Darya rivers, which were the rivers that fed the freshwater Aral Sea.

Until the 1960s, the system of canals, rivers, and the Aral Sea was fairly stable. However, in the 1960s, the Soviet Union decided to expand the canal system and drain more water from the rivers that fed the Aral Sea.

2. _____

Thus, in the 1960s, the Aral Sea began shrinking quite rapidly. By 1987, the single sea dried up enough to create a northern lake and a southern lake. In 2002, the southern lake shrunk and dried up to become an eastern lake and a western lake. In 2014, the eastern lake completely evaporated and disappeared.

The Soviet Union regarded the cotton crops as far more valuable than the Aral Sea fishing economy, which had once been the backbone of the regional economy. Today, you can visit former coastal towns and villages and see long-abandoned piers, harbors, and boats.

Prior to the evaporation of the lake, the Aral Sea produced about 20,000 to 40,000 tons of fish a year. This was reduced to a low

of 1,000 tons of fish a year at the height of the crisis but things are now headed in a positive direction.

3. _____

In 1991, the Soviet Union was disbanded and Uzbekistan and Kazakhstan became home to the vanishing Aral Sea. Since then, Kazakhstan has been working to resuscitate the Aral Sea.

The first innovation that helped save part of the Aral Sea fishing industry was Kazakhstan's construction of the Kok-Aral Dam on the southern shore of the northern lake, thanks to support from the World Bank. This dam has caused the northern lake to grow by 20 % since 2005.

The second innovation has been the construction of the Komushbosh Fish Hatchery at the northern lake where they raise and stock the northern Aral Sea with sturgeon, carp, and flounder. The hatchery was built with a grant from Israel.

Predictions are that the northern lake of the Aral Sea could soon produce 10,000 to 12,000 tons of fish a year, due to those two major innovations.

4. _____

However, with the damming of the northern lake in 2005, the fate of the southern two lakes was nearly sealed and the autonomous northern Uzbek region of Karakalpakstan will continue to suffer as the western lake continues to vanish.

5. _____

The huge, dried-up lakebed is a source of disease-causing dust that blows throughout the region. The dried remnants of the lake contain not only salt and minerals but also pesticides like DDT that were once used in huge quantities by the Soviet Union. As a result, the area's inhabitants have suffered health problems at unusually high rates – from throat cancers to anemia and kidney diseases – and infant mortality in the region has been among the highest in the world.

Additionally, the USSR once had a biological-weapons testing facility on one of the lakes within the Aral Sea. Although now closed, the chemicals used at the facility help make the destruction of the Aral Sea one of the great environmental catastrophes of human history. Today, what was once the fourth largest lake on the planet is just a dustbowl.

Ex.6.32. Answer the questions to the text above.

1. Where is the Aral Sea situated?
2. What did the Soviet Union do to provide water to the cotton plantations?
3. When and why did the Aral Sea begin shrinking?
4. How many lakes are there instead of the Aral Sea now?
5. What two major innovations helped save part of the Aral Sea fishing industry?
6. What is happening to the western lake?
7. What are the consequences of the Aral Sea shrinking?

Ex.6.33. Match the English words with their Ukrainian equivalents.

- | | |
|----------------|----------------|
| 1) shrinking | a) пил |
| 2) cotton | b) хребет |
| 3) irrigation | c) інкубатор |
| 4) backbone | d) залишки |
| 5) disband | e) зникати |
| 6) resuscitate | f) зрошення |
| 7) dam | g) скорочення |
| 8) hatchery | h) розпустити |
| 9) vanish | i) бавовна |
| 10) dust | j) дамба |
| 11) remnants | k) реанімувати |

Ex.6.34. Put the sentences into correct order according to the text above.

1. The Aral Sea was divided into two parts – a northern lake and a southern lake.
2. The Aral Sea began shrinking quite rapidly.
3. The Soviet Union decided to provide water to the cotton plantations of Uzbekistan.
4. Kazakhstan has been working to resuscitate the Aral Sea.
5. The Soviet Union decided to expand the canal system and drain more water from the rivers that fed the Aral Sea.
6. The southern lake shrunk and dried up to become an eastern lake and a western lake.

7. They made irrigation canals to move the water from the Amu Darya and Syr Darya rivers to the cotton plantations.

8. The eastern lake completely evaporated and disappeared.

9. The system of canals, rivers, and the Aral Sea was fairly stable.

Ex.6.35. Complete the text with the words from the box.

<i>National Geographic, edge, arrive, sand, world, separated, place, lake, rigs, desert, fill, fish, rain, dry, satellite, salty</i>
--

The Aral Sea used to be a busy 1)... . Almost 20 percent of the Soviet Union's 2)... came from here. 40,000 people lived and worked near the 3)... . Then people used the water in the two rivers for agriculture, so the water didn't 4)... at the Aral Sea. Also, it didn't 5)... for many years.

Then, in 2005, the Kazakh government and the World Bank built a dam. The dam 6)... the north and south parts of the sea. Then the north part of the Aral Sea started to 7)... with water again.

Philip Micklin, a scientist, studies the Aral Sea. In 2010 he said 'Nature can come back'. But in 2014, he saw 8)... pictures of the east part of the Aral Sea – it was completely 9)....

In June 2015 a scientist from Uzbekistan, Yusup Kamalov, and a 10)... reporter visited the Aral Sea. They found a huge 11)... . They stood on the 12)... . Once it was the 13)... of the water. Now the water is 80 kilometres away. They drove to the water. On the way, they passed oil and natural gas 14)... . Kamalov said that every year there are more oil rigs. They arrived at the edge of the Aral Sea. The water was very 15)... . There were no fish. Kamalov said, 'This is what the end of the 16)... looks like'.

UNIT 7. WASTE DISPOSAL METHODS

Key words

discharge – зливання	warranty – гарантія
by- product – побічний продукт	to recycle – переробляти
equipment – обладнання	to face – зіштовхуватися
raw – сировина	to purify – очищувати
assembly – зібрання	to sort – сортувати
to rely on – покладатися	cardboard – картон
residual – залишковий	to donate – жертвувати
wastewater – стічні води	collection – збирання
municipal wastes – міські відходи	manufacture – виробництво
to eliminate – усувати	purchase – покупка
sewer – стічна труба	substitute – заміна
safely regulations – правила	to wrap – загортати
техніки безпеки	to achieve – досягати
to discard – відкидати	domestic – місцевий
to oblige – зобов'язувати	transparent – прозорий
purpose – мета	tax – податок
durable – тривалого користування	to assume – припустити
concern – турбота	

Ex.7.1. Read the text and answer the questions below.

Industrial Waste Treatment

Many different types of solid, liquid, and gaseous wastes are discharged by industries. Most industrial waste is recycled, treated and discharged, or placed in a landfill. There is no one means of managing industrial wastes because the nature of the wastes varies widely from one industry to another. One company might generate a waste that can be treated readily and discharged to the environment (direct discharge) or to a sewer and in this case final treatment might be accomplished at a publicly owned treatment works (POTW). Treatment at the company before discharge to a sewer is referred to as pretreatment. Another company might generate a waste which is regarded as hazardous and therefore requires special management procedures related to storage, transportation and final disposal.

Nowadays there are a lot of national governmental regulations to manage and control industrial wastes (solid, gaseous, liquid, hazardous, chemical, etc.): Clean Water Act (CWA), Environmental Protection Agency (EPA), Best Available Technology (BAT), Clear Air Act (CAA), Maximum Achievable Control Technology (MACT), Resource Conservation and Recovery Act (RCRA), Hazardous and Solid Waste Amendments (HSWA).

In 1990, the United States, through the Pollution Prevention Act, adopted a program designed to reduce the volume and toxicity of waste discharges. Pollution prevention (P2) strategies might involve changing process equipment or chemistry, developing new processes, eliminating products, minimizing wastes, recycling water or chemicals, trading wastes with another company, etc. In 1991, the EPA instituted the '33/50' program which was to result in an overall 33 % reduction of 17 high priority pollutants by 1992 and a 50 % reduction of the pollutants by 1995. Both goals were surpassed. This program not only has been successful, but it sets an important precedence because the participating companies volunteered. Additionally, P2 efforts have led industries to rigorously think through product life cycles. A Life Cycle Analysis (LCA) starts with consideration for acquiring raw materials, moves through the stages related to processing, assembly, service and reuse, and ends with retirement or disposal. The LCA therefore reveals to industry the costs and problems versus the benefits for every stage in the life of a product.

In designing a waste management program for an industry, one must think first in terms of P2 opportunities, identify and characterize the various solid, liquid and gaseous waste streams, consider relevant legislation, and then design an appropriate waste management system. Treatment systems that rely on physical (e.g., settling, floatation, screening, sorption, membrane technologies, air stripping) and chemical (e.g., coagulation, precipitation, chemical oxidation and reduction, pH adjustment) operations are referred to as physicochemical, whereas systems in which microbes are cultured to metabolize waste constituents are known as biological processes (e.g., activated sludge, trickling filters, biotowers, aerated lagoons, anaerobic digestion, aerobic digestion, composting). Often,

both physicochemical and biological systems are used to treat solid and liquid waste streams. Biological systems might be used to treat certain gas streams, but most waste gas streams are treated physicochemically (e.g., cyclones, electrostatic precipitators, scrubbers, bag filters, thermal methods). Solids and the sludges or residuals that result from treating the liquid and gaseous waste streams are also treated by means of physical, chemical, and biological methods.

In many cases, the systems used to treat wastes from domestic sources are also used to treat industrial wastes. For example, municipal wastewaters often consist of both domestic and industrial waste. The local POTW therefore may be treating both types of wastes. To avoid potential problems caused by the input of industrial wastes, municipalities commonly have pretreatment programs which require that industrial wastes discharged to the sewer meet certain standards. The standards generally include limits for various toxic agents such as metals, organic matter measured in terms of biochemical oxygen demand or chemical oxygen demand, nutrients such as nitrogen and phosphorus, pH and other contaminants that are recognized as having the potential to impact on the performance of the POTW. At the other end of the spectrum, there are wastes that need to be segregated and managed separately in special systems. For example, an industry might generate a hazardous waste that needs to be placed in barrels and transported to an EPA approved treatment, storage or disposal facility (TSDF).

Thus, it is not possible to simply use the same treatment operations for all industrial waste streams, but an effective, generic strategy has been developed in recent years for considering the waste management options available to an industry. The basis for the strategy is to look for P2 opportunities and to consider the life cycle of a product. An awareness of waste stream characteristics and the potential benefits of stream segregation is then melded with the knowledge of regulatory compliance issues and treatment system capabilities/performance to minimize environmental risks and costs.

1. What can be done with most industrial waste?
2. What do the means of managing industrial wastes depend on?
3. What are the main national governmental regulations to control and manage industrial wastes?

4. What were pollution prevention strategies in a program adopted in 1990 in the USA?

5. What does a Life Cycle Analysis start with?

6. What should be taken into account in designing a waste management program for an industry?

7. What are physicochemical and biological treatment systems referred to?

8. Which standards do pretreatment programs include to avoid problems with industrial wastes?

Ex.7.2. Decide whether the statements are true or false.

1. Almost all industrial wastes are usually managed in the same.

2. Sometimes companies 'pretreat' waste before discharge to a sewer.

3. Hazardous wastes require special storage, transportation and final disposal.

4. Pollution prevention (P2) aims to reduce the volume and toxicity of waste discharges.

5. The '33/50' program's purpose was to reduce pollution but it failed.

6. Life Cycle Analysis traces all the stages a product goes through – from production to disposal.

7. Physicochemical treatment systems use microbes to metabolize waste constituents.

8. To be treated as domestic waste, industrial waste must meet particular standards.

9. Looking for P2 opportunities and considering the life cycle of a product are two key points in successful industrial waste management.

Ex.7.3. Match the words with their definitions.

- | | |
|-----------------|--|
| 1) eliminate | a) the action or fact of making something smaller or less in amount, degree, or size |
| 2) sewer | b) an aim or desired result |
| 3) reduction | c) deal with in a certain way |
| 4) raw material | d) completely remove or get rid of (something) |

- | | |
|----------------|--|
| 5) volume | e) an underground conduit for carrying off drainage water and waste matter |
| 6) goal | f) a rule or directive made and maintained by an authority |
| 7) discharge | g) a method of getting rid of very large amounts of rubbish by burying it in a large deep hole |
| 8) treat | h) allow (a liquid, gas, or other substance) to flow out from where it has been confined |
| 9) landfill | i) the basic material from which a product is made |
| 10) regulation | j) the amount of space that a substance or object occupies |

Ex.7.4. Complete the text with the words from the box.

experts, regional, forbidden, habits, aerosols, recycling, hazardous, century, obliged, reactors, borders, laws, glass, treatment, national, bicycles

Pollution is one of the greatest problems which mankind has been facing over the past 1)... . There are three levels on which the problem can be solved – international, 2)..., and, last but not least, personal.

What can be done globally? When a disaster occurs, it may affect millions of people and animals and destroy vast areas regardless international 3)... . For example, radiation or 4)... gas emissions can spread easily throughout kilometres, or hundreds and even thousands kilometres. Therefore, there should be strict safety regulations governing construction of nuclear 5)... and chemical plants on international level. Furthermore, they should be regularly inspected by international 6)... .

What can be done on a national level? Governments must work to reduce pollution by providing appropriate 7)... and regulations. For instance, to reduce air pollution car manufacturers and factories' owners should be 8)... to fit effective filters on car exhausts and factory chimneys. Sewage water direct discards into lakes, rivers, and seas should be 9)... on a national level. Industries should be obliged to use effective sewage 10)... systems. Building wastes incineration and waste 11)... plants will help protect soil from the damaging effect of solid wastes in landfills.

Lastly, what can we do as individuals? Well, we all should change our 12)... and even lifestyles – using public transport or 13)... instead of cars, boycotting products such as 14)... which damage the ozone layer, saving water at home, taking part in national and 15)... clean ups, planting trees in our neighbourhoods, contributing to recycling plastic, 16)...., and paper will help us save our planet.

Ex.7.5. Answer the question to the text above.

1. What are the levels on which pollution problems can be solved?
2. What can be done on different levels to reduce pollution?

Ex.7.6. Read the text and answer the questions below.

Reduce, Reuse, Recycle

Called the ‘three R’s’ of waste management, this waste hierarchy (reduce, reuse, recycle) shows the order of priority of actions to be taken to reduce the amount of waste generated, and to improve overall waste management processes and programs.

The three R’s – reduce, reuse and recycle – all help to cut down on the amount of waste we throw away. They conserve natural resources, landfill space and energy. Plus, the three R’s save land and money communities must use to dispose of waste in landfills.

By refusing to buy items that you don’t need, reusing items more than once and disposing the items that are no longer in use at appropriate recycling centers, we can contribute towards a healthier planet.

Reduce. The concept of reducing what is produced and what is consumed is essential to the waste hierarchy. The logic behind it is simple to understand – if there is less waste, then there is less to recycle or reuse. The process of reducing begins with an examination of what you are using, and what it is used for. There are three simple questions to assess the reduction value of an item or process: 1) Is there something else that can be used for this purpose? 2) Is this something that needs to be done? 3) Is the item a part of something that you need to do, or want to do in your life?

Here are some of things you can do to reduce the waste: print on both sides of the paper to reduce paper wastage; use cloth napkins instead of paper ones; avoid using disposable plates, spoons, glass,

cups and napkins – they result in large amount of waste; avoid buying items that are over-packaged with foil, paper, and plastic – this excess packaging goes to waste; buy durable goods that have long warranty.

Reuse. You may have a box of things you keep that are broken or that you don't have a use for that you hang on to in-case you find another use for them; or you may find bargains on old furniture or go trash picking and get things that you can refinish – in either case you are working towards reusing the item. Learning to reuse items, or re-purpose them for a use different then what they are intended for is essential in waste hierarchy.

One of the best examples for how this is being done today is the modular construction of homes and office buildings that is being created out of discarded shipping containers. These large, semi-truck sized metal containers represent a huge waste problem. Repurposing them as homes and offices saves them from the landfills and doesn't require the additional expenditure of nature resources to melt down and reconfigure the metals used to create them.

You may either reuse those items for your own use or donate so that others can use them. You can reuse items in such ways: old jars and pots can be used to store items in kitchen or to store loose items together such as computer wires; old tyres can either be sent to recycling station or can be used to make tyre-swing; used wood can be used as firewood or can be used woodcrafts; old newspapers can be used to pack items when you're planning to move to another home or store old items; waste paper can be used to make notes and sketches and can be send to recycling center when you don't need them anymore. Apart from this, you can build a compost bin and reuse many waste items like used tea bags. The waste then degrades and turns into compost that help your plants grow and shine.

Recycle. The last stage of the waste hierarchy is to recycle. To recycle something means that it will be transformed again into a raw material that can be shaped into a new item. There are very few materials on the earth that cannot be recycled. One of the issues facing communities that want to become more involved with a recycling effort is that while the relying collection and sorting process may be affordable to implement, there still has to be a facility to receive

and transform the discarded waste into a raw material. More progress is being made toward uniting recycling plants with industries that can process the waste material through agreements and incentive credits.

To make the first step towards efficient recycling, we should: sort our household waste into different groups: glass bottles, paper and cardboard, plastic, textiles, metal, wood buy products that can be recycled; buy products that have been made from recycled material; avoid buying hazardous materials that could pose difficulty for you to recycle; buy non-toxic products, whenever possible.

1. What is the goal of the 'three R's' waste management?
2. What does each stage in 'reduce, reuse, recycle' waste management hierarchy mean?
3. What questions should be answered to assess the reduction value of an item or process in one's life?
4. What can be done to reduce the number of things we use in our daily lives? Give your own examples.
5. What are the examples of reusing items mentioned in the text? Give your own ideas.
6. What problem do communities that want to become more involved with a recycling effort face?
7. What should we do to contribute to recycling process?
8. What do you do to 'reduce, reuse, recycle'?

Ex.7.7. Match the three R's with their definitions.

- | | |
|---------|---|
| Reuse | a) take materials you have finished using in order to make new ones |
| Reduce | b) use an object again and again |
| Recycle | c) buy only what you need |

Ex.7.8. Divide the useful tips into three groups according to a stage of the 'three R's' hierarchy.

Reduce	Reuse	Recycle

1. Buy only what you need, avoid unnecessary purchases and borrow items where possible.

2. Take a carrier bag when go shopping.
3. Buy products that can be recycled.
4. Buy products with little packaging, avoid disposable items and buy in bulk when possible.
5. Donate old clothes to charity.
6. Sort your household waste into different groups: glass bottles, paper and cardboard, plastic, textiles, metal, wood.
7. Buy products that can be reused, rather than thrown away, such as rechargeable batteries.
8. Print and write on both sides of a paper sheet.
9. Make bookmarks out of used paper.
10. Buy product that are made from recycled material
11. Keep recycle bins in an obvious place so you won't forget to use it.
12. Buy products that have been made from recycled material.
13. Donate unwanted items, instead of throwing them away.
14. Use shoe boxes as storage containers.
15. Buy non-toxic products, in order to avoid hazardous waste.
16. Make items such as a bird table or spice rack out of old furniture.
17. Compost your garden kitchen waste.

Ex.7.9. Read the text and answer the questions below.

Recycling

Recycling is recovery and reprocessing of waste materials for use in new products. The basic phases in recycling are the collection of waste materials, their processing or manufacture into new products, and the purchase of those products, which may then themselves be recycled. Typical materials that are recycled include iron and steel scrap, aluminium cans, glass bottles, paper, wood, and plastics. The materials reused in recycling serve as substitutes for raw materials obtained from such increasingly scarce natural resources as petroleum, natural gas, coal, mineral ores, and trees. Recycling can help reduce the quantities of solid waste deposited in landfills, which have become increasingly expensive. Recycling also reduces the pollution of air, water, and land resulting from waste disposal.

There are two broad types of recycling operations: internal and external. Internal recycling is the reuse in a manufacturing process of materials that are a waste product of that process. Internal recycling is common in the metals industry, for example. The manufacture of copper tubing results in a certain amount of waste in the form of tube ends and trimmings; this material is remelted and recast. Another form of internal recycling is seen in the distilling industry, in which, after the distillation, spent grain mash is dried and processed into an edible foodstuff for cattle.

External recycling is the reclaiming of materials from a product that has been worn out or rendered obsolete. An example of external recycling is the collection of old newspapers and magazines for repulping and their manufacture into new paper products. Aluminum cans and glass bottles are other examples of everyday objects that are externally recycled on a wide scale. These materials can be collected by any of three main methods: buy-back centres, which purchase waste materials that have been sorted and brought in by consumers; drop-off centres, where consumers can deposit waste materials but are not paid for them; and curbside collection, in which homes and businesses sort their waste materials and deposit them by the curb for collection by a central agency.

Society's choice of whether and how much to recycle depends basically on economic factors. Conditions of affluence and the presence of cheap raw materials encourage human beings' tendency to simply discard used materials. Recycling becomes economically attractive when the cost of reprocessing waste or recycled material is less than the cost of treating and disposing of the materials or of processing new raw materials.

1. What is recycling?
2. What are the basic phases in recycling?
3. What materials can be recycled?
4. What is the difference between internal and external recycling?
5. Which methods can be used in collecting materials for recycling?

Ex.7.10. Match the words with their definition.

- | | |
|-----------------|--|
| 1) recycle | a) the action of buying something |
| 2) copper | b) a naturally occurring solid material from which a metal or valuable mineral can be extracted profitably |
| 3) substitute | c) the action of purifying a liquid by a process of heating and cooling |
| 4) purchase | d) convert (waste) into reusable material |
| 5) process | e) a stone or concrete edging to a street or path |
| 6) discard | f) use or add in place of |
| 7) ore | g) perform a series of mechanical or chemical operations on (something) in order to change or preserve it |
| 8) distillation | h) fit to be eaten |
| 9) curb | i) a red-brown metal, the chemical element of atomic number 29 |
| 10) edible | j) get rid of something as no longer useful or desirable |

Ex.7.11. Match the words with their synonyms/equivalents.

waste	hazardous
landfill	protected
recyclable	drain
safe	dump
dangerous	ecological-friendly; green
disposal	garbage
sewer	burning
incineration	elimination

Ex.7.12. Match the kinds of waste with the sentences related to them.

- | | |
|--------------------------|--|
| 1) Food and garden waste | a) Most of it can be recycled, look for the recycle symbol. |
| 2) Glass | b) It is made of either aluminium or steel. Both types can be recycled. |
| 3) Plastic bottle | c) Most of it is made of at least 50% recycled material. Recycling it saves trees. |

- | | |
|------------------------|--|
| 4) Paper and cardboard | d) Clothes, sheets, blankets and shoes can all be recycled. Materials can be shredded and the fibres made into new fabrics. |
| 5) Drinks can | e) It is 100 % recyclable. It can be re-melted and re-used over and over again, forever. |
| 6) Textile | f) It can be turned into compost for your garden instead of being sent to a landfill where it goes smelly and makes the dangerous gas methane. |

Ex.7.13. Complete the text with appropriate words. Use one word only in each gap.

Hi, I want ... talk about recycling. We all live ... the planet Earth. We all have ... use things ... our daily lives. ..., we all have to think about pollution and waste.

I think plastic is a big problem, especially in countries like Japan. In Japan, many products are wrapped in plastic. ..., a lot ... plastic ... used. We can recycle some kinds ... plastic, but we cannot recycle all kinds ... it. P.E.T. bottles can be recycled, ... when we recycle P.E.T. bottles, we usually don't make new P.E.T. bottles.

'Pilot' is a company ... makes pens. One ... its new pens is called 'B2P'. B2P means 'bottle to pen'. The B2P pen is 89 % recycled P.E.T. plastic. Clothes companies ... use recycled P.E.T. plastic (RPET). ... fact, ... 2008, 363,000 tonnes of P.E.T. plastic was used ... make fibre in Europe. That fibre is used in things like ski jackets and duvets. Polyester is the same as P.E.T. plastic, but the name is different. Your shirt and your water bottle are the same! Amazing!

Ex.7.14. Answer the questions to the text above.

1. What is used a lot in Japan to wrap products?
2. What plastic can be recycled?
3. How is recycled P.E.T. plastic used in Europe?
4. Do you think that recycled plastic products are a good idea? Why?

Ex.7.15. Read the article. For questions 1–8, choose the answer (a, b, c or d) which you think fits best according to the text.

Recycling in the USA

Julie Lewis from Oregon, in the United States, is wearing an expensive looking pair of boots. They are durable yet fashionable. To look at them you would never know that they were made entirely of recycled materials. Julie owns her own shoemaking company and has achieved a long-term ambition to turn waste into something useful. The shoes are made from all sorts of otherwise useless materials, including textile scraps, rubber from tires and plastic bags. Julie knows that she cannot solve the world's environmental problems single-handed, but nonetheless she feels she is doing well at a local level.

Recycling has become extremely popular in the US, particularly in recent years when the number of recycling schemes has increased by 500 percent. 65 percent of aluminum cans are recycled plus a quarter of paper and 20 percent of glass. The enthusiasm for re-using materials has come from the realization that Americans produce far more waste per person than most Europeans; a total of 200 million tons a year. *This* is twice as much per capita as Germany, for example, and it would be enough to fill a line of dustbin lorries stretching eight times around the world.

America even exports its waste. Taiwan buys used paper to make more paper and Japan uses American scrap metal and makes it into new cars, which it then sells back to the US. Two thirds of the remaining waste is buried in landfill sites. Disposal of waste poses a major problem. Landfill sites can cause pollution of water supplies. And as sites fill up, new ones need to be found. Some rubbish is burnt but this pollutes the atmosphere. The obvious answer, then, is to recycle more. Recycling is already big business – Julie Lewis is a perfect example. Her company has already attracted millions of dollars worth of investment. Recycled products are no longer seen as poor quality goods but as desirable alternatives.

A hugely successful scheme has been operating in Palm Beach County since 1988. Rubbish is sorted into different categories. Paper, glass and plastic are sold to recycling firms. Kitchen waste is used to

power a generator which supplies electricity to 30,000 houses. Other materials are used to make soil, which is then used for growing fruit and vegetables.

There are of course economic arguments against recycling. It can be expensive to run the schemes. And as Lynn Scarlett, a government adviser from Los Angeles argues, it does not make economic or environmental sense to transport materials for recycling from areas which still have plenty of landfill space.

Manufacturers in Germany are trying to solve the problem at the production stage, mainly by looking at how their goods are packaged. Soap powders are now more concentrated and packed in small containers, toothpaste tubes are sold without boxes and plastic wrapping has been reduced.

In a time when newspapers and TV news bulletins are filled with depressing stories of environmental disasters, it is important to remind people, especially children, that they can make a difference. After all, they can recycle their waste every day of their lives.

1. Julie Lewis has always wanted...
 - a) to run her own business.
 - b) to be involved in recycling.
 - c) to look fashionable.
 - d) to wear expensive shoes.
2. Americans now recycle far more than they used to because...
 - a) they are competing with Germany.
 - b) they want to make a profit from recycling.
 - c) they need more aluminum.
 - d) they produce more rubbish than other countries.
3. What does *this* in line 14 refer to?
 - a) The type of rubbish produced.
 - b) The amount of rubbish produced.
 - c) Americans' enthusiasm.
 - d) The re-use of waste materials.
4. Of what is Julie Lewis a 'perfect example'?
 - a) The fact that re-using waste is a money-making activity.
 - b) The fact that more rubbish should be burnt.

- c) The fact that women can attract investment.
- d) The fact that recycled products can be of high quality.
- 5. What does the Palm Beach County scheme involve?
 - a) Making energy out of waste.
 - b) Selling fruit and vegetables for profit.
 - c) Producing plastic bottles.
 - d) Opening new recycling businesses.
- 6. One of the arguments against recycling is that...
 - a) it makes no sense using landfill sites.
 - b) it damages the environment.
 - c) no one is interested in running the schemes.
 - d) it can be uneconomical to ship waste products cross-country.
- 7. German manufacturers...
 - a) are concentrating on improving soap powders.
 - b) sell toothpaste in boxes instead of tubes.
 - c) have cut down on packaging.
 - d) are trying to make goods cheaper.
- 8. Why is recycling particularly important for children?
 - a) It encourages them to read newspapers.
 - b) It shows them that they can do something useful.
 - c) It is depressing.
 - d) It is specially planned for them.

Ex.7.16. Look at the following words from the text and explain their meanings:

Durable, ambition, textile, single-handed, per capita, scrap metal, landfill sites, disposal, alternatives.

Ex.7.17. Fill in the gaps with the appropriate word(s) from the box using synonyms in brackets.

<i>long-term entirely waste wrapping sorted</i>

1. We should try to dispose of our ... in a way that won't harm the environment. (*rubbish*)

2. The hole in the ozone layer will have ... effects on the world's climate. (*long-lasting*)

3. We should try to buy products with as little ... as possible. (*packaging*)

4. Rubbish must be ... before it is sent for recycling. (*separated into similar types*)

5. Their house is built ... of materials taken from demolished buildings. (*totally*)

Ex. 7.18. Find the odd word out.

- 1) dustbin / cupboard / waste-paper basket / ashtray
- 2) tin / can / metal / plastic
- 3) waste / litter / glass / rubbish
- 4) reduce / involve / lessen / decrease

Ex. 7.19. Fill in the correct word derived from the words in brackets.

If we want to find a 1)... (*solve*) to the world's waste disposal problems we should look at Palm Beach county in America. The county has an 2)... (*ambition*) recycling scheme which has been 3)... (*extreme*) successful. Waste is almost entirely recycled. Even the kitchen waste is used to provide 4)... (*electric*).

Ex. 7.20. Fill in the gaps with the appropriate word(s) from the box.

<i>plastic</i>	<i>environmentally aware</i>	<i>recycling</i>	<i>environment</i>
<i>products</i>	<i>aluminum</i>	<i>decompose</i>	<i>disposing of</i>
		<i>bottle</i>	<i>banks</i>

It is important these days to try to be as 1)... as possible, which means 2)... our waste instead of 3)... it in the usual way. For example, instead of throwing 4)... cans away, they can be crushed and taken for recycling, and bottles can be taken to 5)... instead of being put in the rubbish bin. We should try to use as little 6)... as possible because it takes a long time to 7)... and to buy recycled paper to write on. Recycled 8)... are often the same price as normal ones, but are a lot kinder to the 9)... .

Ex. 7.21. Arrange the following headings in the right order while reading the text.

1. Organic wastes
2. Shopping habits

3. Harmful effects of landfills
4. Packaging over-usage

Recycling in Great Britain

The British throw away 22.5 million tons of domestic rubbish every year. Why are we so wasteful and where does it go?

1. _____

The British throw away enough rubbish to fill the Albert Hall every two hours: that's 430 million tons of waste a year, from industry, commerce, quarrying, construction, household bins and litter. Most domestic rubbish ends up in landfill sites which, apart from being ugly (Britain is rapidly running out of space for landfills), are ecologically harmful. Around two-thirds of landfill waste is organic, biodegradable matter. As it decomposes it produces methane – a powerful greenhouse gas. Landfills released 25 % of the UK's methane emissions in 2001 – around 2 % of total greenhouse gas emissions.

2. _____

Between 30 % and 40 % of British food ends up in the bin (the highest proportion in the world), 25 % of which could quite safely be eaten by people or animals, or turned into compost. Part of the problem is that we have come to expect fruit and vegetables to look uniformly perfect, which means that farmers and consumers end up discarding perfectly edible but blemished products. Moreover, unnecessarily tight sell-by and use-by dates encourage us to throw away food long before it goes off. The fundamental problem, though, is the way we shop.

3. _____

In previous generations, a woman would do the shopping in her local high street or market, carrying one basket. She was, therefore, careful not to buy more than she could carry and use. Now we take our cars to huge supermarkets and load up shopping trolley to excess. And because we have more disposable income, we can afford to be profligate. Fifty years ago, thrifty housewives made sure that nothing went to waste: scraps went on to the compost heap to fertilize the vegetable patch; leftovers were cooked up in new ways.

4. _____

The British use 460,000 tons of plastic bottles, 32,000 tons of plastic trays, and eight billion carrier bags a year. We also get

through 2.1 million tons of glass, only 30 % of which is ever recycled. But much of the packaging is vital to modern methods of food supply, which depend on centralized processing, long distribution chains and long shelf-lives.

Ex.7.22. Match the words from column A with their Ukrainian equivalents in column B:

A	B
rubbish	марнотратний
litter	відходи
blemished	зіпсований
waste	сміття (яке залишають
profligate	на вулицях)
recycle	сміття
consumer	розкладатися
decompose	переробляти
	споживач

Ex.7.23. Answer the questions using the information from the text.

1. What kind of rubbish do the British throw away every two hours?
2. Under what conditions is a powerful greenhouse gas released?
3. How many tons of rubbish is recycled in Britain each year?
4. How have the shopping habits changed in Britain?
5. What rubbish is called organic?

Ex.7.24. Fill in the correct word derived from the words in brackets.

British Consumers Admit Confusion over Recycling

British 1)... (*consume*) admit that they are confused about exactly what household waste they can recycle, a new poll reveals, with plastic wrapping, mobile phones and 2)... (*dispose*) coffee cups at the top of their list.

Frustrated by what they can and can't recycle, 63 % of householders are puzzled that different councils collect waste in different ways – for example, using different colour bins – while 43 % say they are not sure which days to put their bins out. Nearly three-quarters (73 %) said they would welcome more 3)... (*transparent*) about what happens to their waste, according to the survey of 1,500 adults, by waste management

company Viridor. It found that there was generally low public trust in local authorities which supervised collection facilities.

Dan Cooke, director of external affairs at Viridor, said: 'People across the UK want to recycle more, and recognise the 4)... (*important*) of doing so, but they need better systems and support to ensure the right stuff goes in the right bin every time. We believe that greater transparency in the recycling and waste sector is crucial to rebuilding 5)... (*confident*) with UK consumers to support them with recycling'.

The poll revealed that UK consumers believed that in five years' time up to 64 % of household waste could be recycled, compared to current recycling levels of around 44.3 % in England. Consumers said they were generally confused about whether they could recycle thin plastic wrapping (56 %), mobile phones (52 %) and disposable coffee cups (51 %) although crisp packets and light bulbs also ranked 6)... (*high*) among their concerns.

Only around one in 400 coffee cups is recycled and the rest is sent to a landfill. The BBC recently reported on a huge rise in the amount of material put out for recycling being rejected because it was contaminated. The British Retail Consortium, the trade body for UK retailers, said new labelling would help consumers work out what could be recycled and what couldn't.

'Encouraging householders to put packaging in the right bin is fundamental to maximising recycling and minimising pollution', said Lee Marshall, board member of the On-Pack Recycling Label. 'The labels give people the right clues as they dispose of packaging, linking local collection 7)... (*serve*) to the labels people see on packaging will help councils increase recycling rates, avoid costly landfill taxes and reduce rejection rates at recycling plants'.

Dan Cooke said the UK's recycling policy remained 'largely based on out-dated 8)... (*assume*)' and called on the government and local authorities to come up with new and ambitious thinking 'that moves recycling 9)... (*recover*) and resource management closer to the needs of consumers and to a more 10)... (*produce*) economy'.

A spokesman for the Local Government Association said: 'In the past decade, councils and residents worked together to radically increase recycling. The problem is there is widespread 11)... (*confuse*) over what

can and cannot be recycled. If just one non-recyclable item gets to the bin with 12)... (*recycle*) items, the whole bin gets contaminated. Councils then have to re-sort it, which is time consuming and very expensive. There is no one-size-fits-all solution to waste 13)... (*collect*). What works in an inner-city suburb won't 14)... (*necessary*) work in the countryside'.

Ex.7.25. Read the text and choose the best words to complete it.

Recycling in Europe

The UK has had the *big / bigger / biggest* rise in the amount of waste which is recycled, compared to the rest of Europe, reports the European Environment Agency (EEA) which is in charge *for / of / in* monitoring environmental issues across the EU. It shows recycling in the UK has gone up *by / on / at* 26.5 %. Back in 2001 just 12 % of the UK's waste was *being / been / be* recycled, but now that has risen to 39 %.

However / Though / Thus this is the biggest increase, it actually means that UK is now recycling a similar amount of waste to *many / much / most* of other countries in Europe.

The EEA wants all European countries *be / being / to be* recycling at least 50 % of their waste by 2020, but the group warns that some countries *may / should / must* not make it. Places *as / like / similar* Romania where just 1 % of waste is recycled, and Greece, where they recycle 18 % of their waste, are likely to struggle to meet the requirements. The report also shows that in Norway and Finland, *where / when / why* recycling is quite high, the total amount has actually dropped by 1 % *in / over / since* the past decade. Some countries, such as Germany, Austria and Belgium, already recycle more than half of their waste.

Ex.7.26. Decide whether the statements are true or false according to the text above.

1. More and more waste is being recycled in the United Kingdom.
2. In other European countries the amount of recycled waste has risen even more.
3. British people have recycled 26,5 % less than last year.
4. Compared to 2001, there's 27 % more recycling done today.
5. UK is recycling more than other countries in EU.

6. By 2020 countries in EU will have to recycle 50 % of their waste.
7. It will be difficult for Romania and Greece to recycle 50 % of their waste.
8. In Norway and Finland people recycle a lot.
9. In Norway and Finland recycle has decreased in the past ten years.
10. Germany, Austria and Belgium have already reached the 2020 requirements.

Ex.7.27. Read the text and choose the most suitable heading from the list A–I for each part (1–8). There is one extra heading which you do not need to use.

- A. A slow and expensive process.
- B. A fairly short lifetime.
- C. Longer-lasting technology.
- D. All TV parts are recycled.
- E. Trying to determine what they're made of.
- F. An idea packed with problems.
- G. Hurrying to purchase new technology.
- H. Who is responsible?
- I. Discarding toxic parts – and breaking the rules.

e-Recycling

1. _____

Implausible as it sounds, the recycling of high tech garbage is becoming a big concern. In the last few decades we've been like children in a toy shop, rushing to get our hands on the latest electronic gadgets. Manufacturers have obligingly brought out new toys faster than we can buy them. And of course the more we buy, the more we end up throwing away.

2. _____

The speed of turnover is frustratingly high. Anyone who has ever bought a computer will be aware of the fact that a PC is out of date as soon as you buy it. But while frustration is transient, the toys on the scrap-heap are not. Computers have an average lifespan of five years, and the speed of development, combined with plummeting prices, is reducing this further. If a computer has a fault, it is more economical to throw it away and buy another than to mend it.

3. _____

This trend isn't confined to computers either. Germany, Europe's richest nation, discards 1.5 million tons of electrical appliances every year. Only about 100,000 units are recycled. The vast majority are incinerated or thrown on the tip. And this, Germans are learning to their cost, causes serious problems. One of the country's major recycling firms has been charged with dumping toxic waste containing the substance PCB, once widely used in TVs and computers as insulation. Since 1985 its production has been illegal, and disposal is governed by strict rules. But the rules are not being followed.

4. _____

Klaus Brodersen of Erlangen University is trying to produce a definite classification of what chemicals should and should not be allowed in the production of high tech equipment. But it is an uphill struggle. It costs up to £7,000 to analyze a single component, and so far Brodersen has examined only 200 of the 100,000 most common.

5. _____

Even such seemingly simple things as computer casings are bafflingly recycle-proof. Siemens Nixdorf, which runs a very expensive recycling program for its old equipment, says there are more than 100 different plastics in its computer casings. Few records were kept while they were being made and no one knows precisely what went into each model. The only certainty is that all the casings contain bromine, a kind of toxic flame retardant. It is almost impossible to recycle such plastic and just as difficult to incinerate it. If you do manage to burn it, you produce dioxins, which are also extremely toxic.

6. _____

So what is to be done about electronic waste? Eco-visionaries propose a future in which appliances, not bought but leased, remain the manufacturer's responsibility to the bitter end. This would be a tricky practice, though. Who would take back the equipment – the dealer, manufacturer or importer? What if the firm has gone out of business? Who is going to monitor the manufacturers and ensure that the goods aren't just shipped to countries with laxer regulations?

And, of course, in the long run it's a lot more expensive to hire a TV or computer than it is to buy one.

7. _____

The Swiss have addressed the problem by making a charge at the time of purchase to cover all disposal costs. In Germany, where such a system is on the books but has yet to come into force, there is chaos. Some firms collect without charge, others make you pay, some accept all goods, others just their own-and many refuse to have anything to do with it. Municipal authorities are just as disorganized.

8. _____

The answer to all these problems lies in intelligent construction, with an emphasis not only on economy but also on ease of disposal. Increasing the life-expectancy of products would also alleviate the problems. The manufacturer Loewe has developed a green TV which contains just 39 grams of plastic as opposed to the standard 6.7 kilos and 50 grams of toxic materials against 5 kilos. It is expected to last up to 30 years, twice as long as other TVs. Companies like this are showing the way forward, and it is to be hoped that others will soon follow.

Ex. 7.28. Explain the meaning of the following words.

Gadgets, obligingly, scrap-heap, confined, appliances, insulation, disposal, governed, uphill struggle, component, bafflingly, casings, bromine, leased, monitor, shipped, municipal.

Ex. 7.29. Fill in the word(s) from the list below. Use the word(s) only once.

Average, long, to go, high-tech, short, to follow, strict, uphill, expectancy, toxic, to come, fault, municipal, to run.

- | | |
|------------------------|----------------------|
| 1) a(n) ... lifetime | 8) a(n) ... struggle |
| 2) ... the rules | 9) ... into force |
| 3) ... out of business | 10) in the ... run |
| 4) life-... | 11) to have a(n) ... |
| 5) ... pollution | 12) ... rules |
| 6) a(n) ... life-span | 13) ... a program |
| 7) ... waste | 14) ... authorities |

Ex. 7.30. Find the odd word out.

- 1) dump, disregard, dispose, discard
- 2) waste, garbage, litter, pollution
- 3) recycle, reuse, redo, reprocess
- 4) unlikely, implausible, improbable, irrelevant
- 5) toxin, poison, venom, garbage

Ex. 7.31. Link the sentences together using a relative pronoun.

1. The dead batteries are thrown everywhere. They leak heavy metal.
2. These chemical substances are carried by rainwater into the river. They contaminate the fish and the plants.
3. Therefore people eat the poisoned fish. People may get sick.

Ex. 7.32. Complete the text with the words from the box.

<i>hazards, eco-friendly, corporate, recycle, prevent, waste, landfills, batteries, recycling, disposed of, upgrade, electrical equipment</i>

eCycle Solutions Will Help You Get Rid of Your Out-of-Date Electronics Properly

Since 2005, eCycle Solutions has been diverting electronic waste away from landfills by proposing innovative 1)... solutions. We provide comprehensive recycling services for large 2)... clients while also coordinating electronic recycling services for consumers. In this way, we have prevented thousands of tonnes of electronic 3)... from ending up in a landfill.

Every year, thousands of tonnes of electronic waste are 4)... in landfills across Canada. As individuals and businesses 5)... their technology to include new computers, laptops, portable devices, and servers, more and more functioning electronics are being sent to 6)... . These electronics present numerous health and environmental 7)... – not to mention the massive amount of landfill space that is occupied by electronics that otherwise could have been recycled. From 8)... to electronic screens, these devices are often full of dangerous chemicals. This is why it is so important to properly 9)... your electronics and ensure they do not end up in a landfill.

At eCycle Solutions, we offer comprehensive recycling services for your used electronics and other 10)... . Many common electronics such as computers, laptops, cell phones, and servers must be properly disposed of to 11)... them from ending up in landfills. We allow individual consumers the chance to recycle their electronics in an 12)... way.

Ex.7.33. What is being done in your town/city to prevent pollution? Could more be done? Think about the problems and solutions involved in disposing of high-tech items using the expressions below.

Useful expressions: Technology is a good thing but For example In addition To make matters worse There are solutions such as Manufacturers should

UNIT 8. ENVIRONMENTAL PROTECTION

Key words

reserve (preserve) – заповідник	to deal with – мати справи
preservation – збереження	on behalf of – від імені
landscape – пейзаж	to evolve – розвиватися
budget – бюджет	scale – масштаб
regulation – регулювання	swamp – болото
existence – існування	destination – призначення
to explore – досліджувати	migration – міграція
to claim – вимагати	park ranger – доглядач парку
lighthouse – маяк	to abandon – покидати
congestion – скупченість	overpopulation – перенаселеність
to decompose – розкладатися	to approve – схвалити
legislation – законодавство	to launch – починати
terrain – місцевість	urgent – невідкладний
wetland – болото	renewable – відновлений
charity – благодійність	windmill – вітряк
unreliable – ненадійний	to rectify – виправляти
to employ – використовувати	exhaustible – вичерпний
solar devices – сонячні пристрої	tidal power plant – припливна електростанція

Ex.8.1. Read the text and answer the questions below.

National Parks and Nature Reserves

National parks and nature reserves (also known as biospheres, natural/nature preserves, or natural/nature conserves) are areas set aside by a national government for the preservation of the natural environment. A national park may be set aside for purposes of public recreation and enjoyment or because of its historical or scientific interest. Most of the landscapes and their accompanying plants and animals in a national park are kept in their natural state.

National parks of various countries differ greatly in their effectiveness in protecting their resources. Some governments provide their park systems with large enough budgets to make possible strict enforcement of regulations; others do not. Most national parks have

a built-in paradox: although they often depend for their existence on tourism stimulated by public interest in nature, the preservation of their wildlife depends on its not being molested. This paradox is usually resolved by allowing visitors to travel only within limited areas in the park. It lets them see the park while it minimizes their contact with the wildlife.

Kafue National Park. Covering an impressive 22,400 km², Kafue National Park in Zambia is one of Africa's biggest and parts of it are still unexplored. The park is full of different types of wildlife, and claims to be one of the best places to see leopards. But also elephants, hippos, crocodiles and African wild dogs along with the elusive cheetah can be found in the Kafue. Some species are now under special protection, following a spate of poaching, and authorities are working to conserve their populations.

Bialowieza National Park. There aren't many huge wildlife reserves in Europe, taking into account how densely populated it is compared to other continents. But this area on the border of Belarus and Poland is almost untouched, with dense forests providing homes to elks, bison, deer and wild boar, as well as a bison-cow hybrid known locally as a żubroń.

Bandhavgarh National Park. Known as the Tiger-spotting Capital of Asia, this 446 km² National Park in India also has a large population of breeding leopards and some deer. It's split into four zones – Tala, Magdhi, Khitauli, and Panpatt – and Tala is said to be the hotspot for tiger-spotting, as they wander across the roads seemingly oblivious to the hordes of tourists photographing them.

Uluru-Kata Tjuta National Park. This National Park, situated in the barren center of Australia, is most famous for the large red rock that gives the park its name – Uluru, also known as Ayres Rock. It's a site of great mystical significance to the indigenous Australian population, and so the surrounding area has been preserved as a wildlife reserve.

In Uluru, there are a surprising number of creatures who survive in the gaspingly dry heat – including mammals such as bats and moles, although these are rarely spotted during the day. A more common sight is cold-blooded reptiles, like the thorny devil – a lizard that is native only to Central Australia. There are also 13 species of snake and even

a type of frog that buries itself in the sand, rather than taking up a more traditional frog position near a pond. On top of that, there are beautiful and unusual birds to see.

Croajingolong National Park is another Australian park, but a complete contrast to arid Uluru. Located in Victoria, the ‘garden state’ of Australia, this lush, green area of 875 km² is home to typical Australian animals, such as kangaroos and koalas. Its lushness comes partly from its location right next to water, with the Pacific on the south side and the Bemm River on the west. It is a UNESCO World Biosphere Reserve and is officially owned by the Aboriginal people, as they were settled on the land long before anyone else claimed it. It’s fairly developed though, with campsites, picnic areas and even lighthouses along the coastline and is very much a tourist attraction as well as an Aborigine reserve. Watersports, such as boating and canoeing are available and it’s a great place to sit and admire the view as well as spotting some wildlife hopping through.

Vancouver Island. A settlement built on top of an undersea mountain range, Canada’s Vancouver Island sits off the west coast of the mainland, and stretches for 460 km. It’s famous for whale-watching, and pods of Orcas visit the area regularly. There is also a chance to swim with salmon or go on the hunt for grizzly bears (not in a literal sense, just to track them down and photograph them). It’s very much a working community, with fishing and logging the primary industries, but it is tourist-friendly and hosts a number of festivals throughout the year, like the Pacific Rim Whale Festival, which are well worth visiting.

Khao Sok National Park in Thailand is really one of the most beautiful places on the planet. With mountains, lakes and rainforest, the landscape is ever-changing, and it’s a great place to observe some of the local wildlife. Visitors can go trekking on elephants, canoeing or on jeep safari and the wildlife is hugely varied. There are leopards, tigers and gibbons as well as elephants and even cobras.

Amazon Rainforest. Full of all kinds of deadly dangerous creatures, from anacondas to tree frogs, it’s a unique place which still looks like the world it was before man intervened. With an area of 7,000,000 km² it’s on a different scale to the rest of the reserves,

and is home to hundreds of species that simply don't exist anywhere else.

The Amazon Rainforest is the world's richest and most-varied biological reservoir, containing several million species of insects, plants, birds, and other forms of life, many still unrecorded by science. The luxuriant vegetation encompasses a wide variety of trees, including many species of myrtle, laurel, palm, and acacia, as well as rosewood, Brazil nut, and rubber tree. Excellent timber is furnished by the mahogany and the Amazonian cedar. Major wildlife includes jaguar, manatee, tapir, red deer, capybara and many other types of rodents, and several types of monkeys.

1. What are national parks and nature reserves?
2. What do all the national parks have in common?
3. What is the common goal of national parks?
4. What do some governments do to support their park systems?
5. What is a built-in paradox in national parks? How is it resolved?

Ex.8.2. Match the words with their definitions.

- | | |
|----------------|--|
| 1) conserve | a) continue to live or exist, especially in spite of danger or hardship |
| 2) landscape | b) (of a species) seriously at risk of extinction |
| 3) extinct | c) roughly calculate or judge the value, number, quantity, or extent of |
| 4) legislation | d) the natural home or environment of an animal, plant, or other organism |
| 5) survive | e) protect (something, especially something of environmental or cultural importance) from harm or destruction |
| 6) endangered | f) all the visible features of an area of countryside or land, often considered in terms of their aesthetic appeal |
| 7) wildlife | g) (of a species, family, or other larger group) having no living members |
| 8) illegal | h) the process of making or enacting laws |
| 9) estimate | i) wild animals collectively; the native fauna (and sometimes flora) of a region |
| 10) habitat | j) the law says that it is not allowed |

Ex.8.3. Complete the text with the words from the box.

*injured, mind, breathtaking, navigate, water, partner, protect, dry,
footwear, prepared, erosion, trails, home*

Visit Arches National Park!

Arches National Park is located in the 1)... desert of Southeastern Utah just north of the city of Moab. This park is 2)... to over 2,000 natural arches carved from sandstone layers by wind, water, and 3)... . Local and international visitors can enjoy 4)... views of these natural wonders throughout the year. Some formations are just off the road and are accessible to all people within a short distance on well-traveled 5)...; other arches can only be reached by driving distances on four-wheel drive roads or after long strenuous hikes along sandy washes.

Like any hike of this nature, you should be 6)... for the adventure in the desert.

First, hike with a 7)... for safety and leave word where you will be traveling in case of an emergency.

Second, carry a cellphone with you. However, keep in 8)... that you might not get any reception, so don't depend on it.

Third, be sure to have the right clothing and 9)... for the hike. Light, breathable clothing is best during the summer, along with a hat and sturdy hiking shoes.

Fourth, carry plenty of 10)... because you can become quickly dehydrated without it. Having a few snacks can give you energy, too.

Fifth, take a small first-aid kit with you, particularly on longer hikes in case you get 11)....

Sixth, pack a detailed map of the area you are hiking, along with a compass and/or a GPS to locate your position. You might need them to 12)... through unfamiliar terrain.

And finally, take nothing home with you except for pictures and memories. You can 13)... these areas by leaving all rocks, flowers, and other objects for future visitors.

Ex.8.4. Choose the best option to answer the questions to the text above.

1. What makes Arches National Park in Utah a unique sightseeing destination?
 - a) the wildlife
 - b) the desert climate
 - c) the geology
2. What is the reason given for hiking with a partner in the park?
 - a) It makes the experience more enjoyable.
 - b) A partner can help you in case of emergency.
 - c) The entrance fee is less for two people or more.
3. What should one wear while visiting the park in the summer?
 - a) light shoes
 - b) a hat
 - c) sturdy clothing
4. What is one item that might be part of the fifth point?
 - a) bandages
 - b) a flashlight
 - c) a lighter
5. Which item was NOT mentioned as a means of getting around in the park?
 - a) a GPS unit
 - b) a guidebook
 - c) a map

Ex.8.5. Match the words from the text above to their definitions.

- | | |
|-----------------|---|
| 1) erosion | a) a dry stream bed |
| 2) breathtaking | b) suffer from lack of water |
| 3) strenuous | c) notify or inform |
| 4) wash | d) physically difficult |
| 5) leave word | e) strong |
| 6) sturdy | f) incredible, awesome, amazing |
| 7) dehydrated | g) wearing away of the soil by wind and water |

Ex.8.6. Complete the sentences with the words from Ex.8.5.

1. ... is often a natural process by which many geological formations are created.
2. The scenic views of the valley were
3. We took a very ... hike that lasted all day, and I'm exhausted.
4. We followed the ...for about a mile until we reached the mouth of the canyon.
5. She didn't ... where she would be traveling, and now her family is really worried.
6. You need to wear ... hiking boots for this trip because we will be going through some rough terrain.
7. The lost hiker was extremely ... when she was found wandering in the desert.

Ex.8.7. Complete the sentences with the words from the box.

<i>dehydrated, sturdy, leave word, strenuous, breathtaking</i>
--

1. Be sure to ... about your travel plans with family or friends.
2. The view from the mountain peak is
3. This hike is ... , so I only recommend it for those who are in excellent physical condition.
4. If you don't drink enough water, you will become
5. Wearing ... shoes or boots is required for this trip.

Ex.8.8. Read the text and decide whether the statements below are true, false, or not mentioned.

National Parks and Climate Change

National parks, nature reserves, protected areas and sites of special scientific interest (SSSIs) are an important part of the natural landscape in most countries. Their habitat and terrains vary massively from tundra and glacier parks in the north to wetlands in Europe, steppes in central and eastern Europe, and prairie grasslands and deserts in other areas. Virtually all kinds of landscape are protected somewhere. And these protected areas are important for the variety of plant and animal life they harbour: caribou, bears, wolves, rare types of fish and birds.

But these areas are under threat from a recent peril – global climate change. No amount of legislation in any country can protect against a worldwide problem. What exactly are the problems caused by climate change? David Woodward, head of the British Council for Nature Conservation, spoke to ‘Science Now’ about some of these areas, and his first point highlighted the enormous variation in nature reserves.

‘Each park or reserve is an ecosystem’, he says, ‘and the larger reserves, such as those in Canada, may have several types of ecological subsystems within it. There are reserves which are half the size of Western Europe, so it doesn’t make sense to talk about them as if they were all the same, or as if the microclimates within them were uniform’. Woodward outlines some of the dangers posed by climatic change to parks in the northern Americas, for example.

‘If climatic change is severe, and in particular if the change is happening as quickly as it is at the moment, then the boundaries of the park no longer make much sense. A park that was designated as a protected area 90 years ago may suffer such change in its climate that the nature of it changes too. It will no longer contain the animal and plant life that it did. So the area which once protected, say, a species of reindeer or a type of scenery, will have changed. In effect, you lose the thing you were trying to protect’. This effect has already been seen in Canada, where parks which once contained glaciers have seen the glaciers melted by global warming.

Jennie Lindstrom, Chief Executive Officer of ‘H₂O’, the charity which campaigns on an international level on behalf of mainland Europe’s protected wetland and wilderness areas, is even more pessimistic. In a letter to ‘Science Now’, she has asserted that up to 70 % of such areas are already experiencing such ‘significant change ... in climate’ that the distribution patterns of flora and fauna are changing, and that all areas will eventually be affected. She estimates that the most profound change is occurring in the northernmost parks in areas such as Finland, Greenland, Iceland and northern Russia, but adds that ‘there is no place which will not suffer the effects of global warming. What we are seeing is a massive change in the environment – and that means the extinction of whole species, as well as visual and structural changes which means

that areas like the Camargue may literally look totally different in 50 or 60 years' time'.

The problems are manifold. First, it is difficult or impossible to predict which areas are most in need of help – that is, which areas are in most danger. Predicting climate change is even more unreliable than predicting the weather. Secondly, there is a sense that governments in most areas are apathetic towards a problem which may not manifest itself until long after that government's term of office has come to an end. In poor areas, of course, nature conservation is low on the list of priorities compared to, say, employment or health. Third, and perhaps most important, even in areas where there is both the political will and the financial muscle to do something about the problem, it is hard to know just what to do. Maria Colehill of Forestlife, an American conservation body, thinks that in the case of climate change, the most we can realistically do is monitor the situation and allow for the changes that we cannot prevent, while lobbying governments internationally to make the changes to the pollution laws, for example, that will enable us to deal with the causes of the problem. 'I am despondent', she admits. 'I have no doubt that a lot of the work we are doing on behalf of the North American lynx, for example, will be wasted. The animal itself can live in virtually any environment where there are few humans, but of course its numbers are small. If climate change affects the other animal life in the areas where it now lives, if the food chain changes, then the lynx will be affected too. Less food for the lynx means fewer lynxes, or lynxes with nowhere to go'.

Certainly, climate change is not going to go away overnight. It is estimated that fossil fuels burnt in the 1950s will still be affecting our climate in another 30 years, so the changes will continue for some time after that. If we want to protect the remnants of our wild landscapes for future generations, the impetus for change must come from the governments of the world.

1. Every country has protected areas or national parks.
2. Countries can protect their parks by changing their laws.
3. A protected area or park can contain many different ecosystems.
4. David Woodward thinks that Canadian parks will all be different in 90 years.

5. Canada, more than any other country, has felt the effects of global warming.
6. H₂O works to protect wetlands everywhere.
7. Some parts of the world will feel the results of global warming more than others.

Ex.8.9. Complete the summary below. Choose your answers from the box below the summary and write them in boxes 1–6. There are more words than spaces, so you will not use all the given words.

governmental willingness, lots of ways, global warming, internationally, locally, after all, for many years, go away overnight, many problems

There are 1)... in attempting to stop the effects of 2)... . One is the problem of predicting change. Another is a lack of 3)... to change the situation; most governments' interest in the problem is limited because the problem will not become very serious 4)... . Finally, there is the problem of what action we should actually take. One solution is both to keep an eye on the situation as it develops, and to push for changes 5)... . Even if we do this, the problem is not going to 6)..., since it takes a considerable time for global warming to happen.

Ex.8.10. Read the text and decide which answer A, B, C or D best fits each space.

Habitat Destruction

All over the world, people are changing the face of the Earth. Wild areas are cleared for farming and to build roads and expand cities. Our factories, cars and power stations poison the 1)... with polluting gases and chemical 2)... . As well as transforming the environment, we are destroying habitats, the homes of 3)... plants and animals. Living things have evolved 4)... millions of years. Many animals and plants can only 5)... in certain environments. When 6)... areas are destroyed, wildlife cannot always 7)... to the new conditions and some species may 8)... . Thousands of species of plants and animals face extinction because of human activities. People can also 9)... from habitat destruction. When forests are 10)... earth is washed away, this causes

crop failure and starvation. There is the future to consider, too; plants provide essential food and can also be used in medicines. If species 11)... extinct, their potential value will never be known.

The scale of destruction is enormous. Swamps, forests, grasslands and jungles are being cleared at an increasing 12)... Half of the world's tropical rainforests have 13)... been destroyed. Coral reefs, called the rainforests of the ocean because they are so rich in life, are 14)... around the world. We must limit the 15)... to habitats now 16)... they remain a valuable resource for the future.

- | | | | |
|------------------|---------------|---------------|---------------|
| 1. A environs | B place | C environment | D ground |
| 2. A rubbish | B nonsense | C remains | D waste |
| 3. A both | B each | C every | D either |
| 4. A over | B in | C during | D since |
| 5. A persist | B survive | C go | D attend |
| 6. A so | B this | C such | D that |
| 7. A adapt | B use | C stand | D bear |
| 8. A fade out | B die out | C give out | D run out |
| 9. A experience | B feel | C suffer | D damage |
| 10. A cut down | B pulled down | C put down | D struck down |
| 11. A get | B die | C result | D become |
| 12. A degree | B rate | C extent | D index |
| 13. A still | B even | C already | D yet |
| 14. A threatened | B violated | C wasted | D spoilt |
| 15. A injury | B hurt | C damage | D pain |
| 16. A so that | B in order to | C in case | D as a result |

Ex.8.11. Complete these newspaper extracts with the correct form of the word in brackets.

According to new statistics, last year saw the most 1)... (*drama*) storms and droughts for ten years. The worst-hit countries were developing ones where extreme weather resulted in 2)... (*starve*) and homelessness. Scientists say that increased global 3)... (*pollute*) is making a significant 4)... (*contribute*) to climatic changes.

According to the Worldwide for Nature the 5)... (*survive*) of Europe bears, lynxes and wolves is being threatened. Some species

are on the brink of 6)... (*extinct*). There have been several 7)... (*conserve*) programmes, but attempts to raise species such as the Iberian lynx in 8)... (*captive*) have failed. The continuing 9)... (*destroy*) of the lynxes' habitat means that it will probably die out over the next fifty years.

Ex.8.12. Complete the text with the words from the box and list the reasons why animals are getting endangered. Which animals are protected by CITES?

<i>hunting, safe, threat, fur, alarming, habitat, cut down, wild, destruction, extinct, endangered, timber, apes, conservation</i>
--

Conservation

Animals and plants are dying out at an 1)... rate. Throughout history, living things have become 2)..., mainly due to climate change. Today humans are the biggest 3)... . Forests are being 4)... and wetlands are being drained for building on which has caused thousands of animals and plants to become endangered. The environment is being changed so much that animals and plants cannot survive. We call this 5)... loss. Trees are burned and cut down for 6)... . The land is then used for buildings and roads. 7)... is another great threat. Animals are hunted for their fur, horns, and meat.

To solve this problem, there are organizations all over the world protecting 8)... creatures and providing safe places for them to live. This process is called 9)... . It includes sheltering and trying to save animals and plants from 10)... by humans.

The snow leopard is an endangered cat and is still hunted illegally in some areas for its 11)... . CITES (The Convention on International Trade in Endangered Species) protects the snow leopard. Whales, dolphins, porpoises, monkeys, 12)..., and lemurs are also protected by CITES.

Experts help endangered species by capturing a few animals in the 13)... and raising them in captivity. Then they are released into a 14)..., suitable area.

Ex.8.13. Choose an endangered animal from the list below and write an essay about it. Think about where it lives and why it is endangered. Is it hunted or is its habitat being destroyed? What sort of things could you do to protect it?

Asian elephant, blue whale, orangutan, chimpanzee, giant panda, gorilla, zebra, leopard, snow leopard, sea lion, tiger.

Ex.8.14. Read the text and decide which word A, B, C or D best fits each space.

American Eagle

America's national symbol is that great bird which is 1)... as the bald eagle. However, the number of this species has dropped from 50,000 in the 1940's to about 300 today. Fortunately, America has taken 2)... by starting to breed these eagles. This takes place at a research centre in Oklahoma, where 300 have been bred and then released into the wild. The eggs are 3)... from wild eagles' nests, found 4)... the country, and are flown straight to the centre by aeroplane. During the 5)... they are kept 6)... in a special container which 7)... them from sunlight, which could easily kill them.

Once they are at the centre, they are continually 8)... until they hatch. Eight hours after the birds emerge, they are given their first meal, 9)... of little pieces of a special meat. At 6 weeks old, they are taken outside to get used 10)... the cooler temperature. The 11)... stages of the bird's introduction to the wild take place at the top of a(n) 12)... tower, where they are kept in a big cage and fed on fish. As time goes by, the cages are removed and they eventually 13)... to fly. All would agree that the 14)... of these beautiful birds flying high in the southern skies 15)... all the 16)... worthwhile.

- | | | | |
|-----------------|----------------|------------|--------------|
| 1. A regarded | B called | C referred | D known |
| 2. A measure | B move | C action | D step |
| 3. A assembled | B concentrated | C piled | D collected |
| 4. A throughout | B all | C at | D through |
| 5. A journey | B cruise | C travel | D expedition |
| 6. A certain | B safe | C sure | D harmless |
| 7. A avoids | B prevents | C hinders | D protects |
| 8. A controlled | B checked | C seen | D noted |

- | | | | |
|-----------------|-----------|---------------|--------------|
| 9. A consisting | B making | C having | D including |
| 10. A of | B from | C to | D in |
| 11. A end | B final | C latest | D finished |
| 12. A eminent | B deep | C outstanding | D high |
| 13. A learn | B train | C teach | D practise |
| 14. A vision | B picture | C sight | D view |
| 15. A creates | B makes | C does | D has |
| 16. A attempts | B effort | C trial | D experiment |

Ex.8.15. Read the text and decide if the statements are true or false.

1. The project on the Danube Delta helps local people.
2. The water flow changed 100 years ago.
3. The restoration project has been unsuccessful.

The Danube Delta

Where the Danube flows into the sea, you can find one of the most important wildlife habitats in Europe. It is called the Danube Delta and it is naturally rich in wildlife. A fifth of the delta is in Ukraine.

Until the 1950s, this area was mainly unspoilt. However, over the next thirty years people built dams and ditches to change the way the water flowed. The aim was to increase the production from farms. This worked at first, but then things went wrong. There were fewer animals and plants. The water in the lakes became salty and people couldn't drink it. The soil became salty, too, so crops couldn't grow very well and the whole area became unproductive.

Then in 2003 the World Wildlife Fund, with the cooperation of the local authorities, started a project to return the environment to its earlier state. Flooding is a natural process which is important to the area, so the project removed the dams and ditches and restored the original water cycle. This created new habitats for plants and animals. The project began on Tataru Island and in 2009 it expanded to Yermakov Island. Today you can see white-tailed eagles and other rare birds in the area. The project has also helped local people. The water is fresher, there are more fish and there is more wood for them to use. The hope is that in the future tourists will be attracted to this beautiful region.

Ex.8.16. Answer the questions to the text above.

1. Why is the Danube Delta important?
2. Why did people start to change the water system?
3. What happened to the soil in the area?
4. Where did the restoration project start?
5. How has the project helped local people?

Ex.8.17. Read the text about the Galapagos Islands and complete the information in the table below using words or phrases from the text. Do not try to replace them with expressions that mean the same.

Ecotourism in the Galapagos Islands

The Galapagos Islands are situated over 600 miles off the coast of Ecuador and close to the Equator. These volcanic islands are considered a ‘natural laboratory’ and have become a favourite destination for scientists and nature lovers. Unfortunately, the Galapagos Islands have become the victim of their own ‘success’. Their worldwide fame has brought too many tourists who often behave no better than if they were visiting a zoo – feeding the animals inappropriate foods and throwing litter around.

Since the Galapagos Islands receive over 100,000 visitors each year, protective measures have been taken to protect the islands and their ecosystem. The population on the four inhabited islands (Santa Cruz, Isabela, San Cristobal, and Floreana) is controlled through strict migration policies regulating the number of permanent residents, and limiting the stay of temporary residents (tourists, volunteers, and external workers) to six months.

For visitors, conservation regulations mean that visits to the islands’ National Park territory are limited to about 50 sites, available only during daylight hours (6 a.m. to 6 p.m.) and subject to park rules and guidelines. All groups that visit the National Park must be accompanied by a qualified guide approved by the National Park. The visitors must follow the marked trails and never leave them. If they do so, they may destroy nests without realising it, because marine iguanas nest in the sand.

Park rangers and guides ask tourists to check their clothes and luggage for insects and seeds, because no live material should be

transported to the islands. If visitors travel with their pets, they have to leave them in the hotel. Animals living on the islands should not be touched. A young sea lion will be abandoned by its mother, for example, if she smells the scent of a human on her young. The same applies to young birds.

Litter of all types must be kept off the islands. Only certain items can be disposed of at sea in selected areas. Do not buy souvenirs or objects made from plants or animals of the islands (with the exception of articles made from wood). Among such articles are turtle shells, sea lion teeth, and black coral.

<i>The islands</i>	1. Scientists think of the Galapagos as a(n) _____. 2. Only _____ of the islands are inhabited. 3. Some tourists do not realise they are not in a(n) _____ and cause a lot of damage.
<i>Visiting the islands and the National Park</i>	4. Visitors to the islands are not allowed to stay longer than _____. 5. The National Park can only be visited during _____. 6. Don't go to the National Park without a(n) _____. 7. Don't walk off the _____.
<i>Care for the Environment</i>	8. Check your belongings for _____ and _____. 9. Don't take your _____ with you. 10. Don't touch the _____. 11. Don't drop _____. 12. Buy gifts made only from _____.

Ex.8.18. Read the texts below. Choose from the sentences (A–F) the one which best fits each space (1–4). There are two choices you do not need to use.

- A. Special organisations are the answer
- B. It's a matter of education
- C. We should all play our part
- D. It's not only our fault
- E. Governments should do more
- F. It's too late for action

Helping the Environment

1. _____

Brian, from Bristol, UK

In my opinion, the dangers to the environment are so big that we can't do much to help – at least not people like you and me. We've been contributing to the problems for so long now that I don't see that there's any real answer. Some people think that governments can introduce new laws to help, but I think we've passed that point now. It's our own fault and we have to live with the consequences of our actions.

2. _____

Janine, from Rouen, France

There's no doubt that we've done a lot of damage to the environment with pollution and all our rubbish. However, I don't think that climate change is just because of us. Our planet, Earth, is enormous and powerful and we are so small. I don't believe that humans can change nature. Not many people agree with me, but I'm sure global warming is part of a natural pattern of events. OK, we haven't helped, but it's not all down to us.

3. _____

Hans, from Oslo, Norway

I don't think the government can do much to help the environment – it's the people who can help. If we all do our bit, we can make a big change to what's happening to our planet. Imagine that everyone rode bicycles instead of driving cars or just switched off their computers, TVs and lights for a while. We wouldn't need so much fuel. Also, if we could change our habits and not buy so much food and try to reuse or recycle our rubbish, we would make a difference!

4. _____

Micky, from Washington, USA

I definitely agree that we should try to help, like join an environmental campaign group or be careful about saving energy. But there's something that I'm convinced can really help. I'm not sure that everyone realises how important it is to teach people about what's happening to the world. Children need to learn about it when they're very young and it should be a big topic for them to study. They will be making the decisions in the future, won't they? I hope they'll be better at it than the adults now.

Ex.8.19. Complete the sentences with the words from the box.

recycle, pick up, rainforest, litter, renewable, fumes, waste, nuclear energy

1. The Amazon ... is home to thousands of plant and animal species.
2. You should always ... anything you drop.
3. Do you ... your empty bottles and newspapers?
4. If you drop ... in EU, you may have to pay a fine of up to €50.
5. Wind and wave energy are ... forms of energy.
6. Most of us ... so much energy just by leaving the lights on unnecessarily.
7. Car ... cause most of the pollution in cities.
8. ... is certainly not the safest form of energy.

Ex.8.20. Match environmental problems 1–5 with their descriptions a–e.

- | | |
|------------------------------|--|
| 1) climate change | a) toxic chemicals and gases present in air and water |
| 2) overpopulation | b) trees are cut down, and not replaced |
| 3) pollution | c) the change in temperature and weather systems as a result of high levels of green-house gases |
| 4) destruction of ecosystems | d) when there are too many people for the environment to support |
| 5) deforestation | e) damage done to the way plants and animals interact |

*Ex.8.21. Read the texts and say what happened in these years:
1970, 1972, 1986, 1988, 2004, 2010.*

Greenpeace

Greenpeace is one of the most active international environmental organisations, with groups in over forty different countries. It was founded in Canada in 1970 under a different name – the Don't Make a Wave Committee. In 1972, the Committee renamed itself as Greenpeace. Its founders were first concerned about the US testing nuclear bombs underground in Alaska. Many people thought the tests might cause earthquakes and tsunamis (the reason for the original name), so the Committee decided to protest. Rather than just going on a march,

the Committee decided to object to the tests by doing something more explicit. So, they sailed to the test site in Alaska. Although they didn't stop the tests immediately, their actions made people notice what was happening. The public supported the Committee and the US government dropped its plans for more testing. Today Greenpeace continues to use direct action to draw attention to environmental concerns.

Many people, particularly governments, don't approve of the methods Greenpeace uses because they consider them dangerous and aggressive. However, Greenpeace is able to publicise issues and bring them to the attention of ordinary people. As a result, changes have happened. In 2010, for example, Greenpeace ran a campaign to prevent packaging companies from using wood grown in ancient forests. Greenpeace has also protected sea creatures by persuading producers of canned fish products to change their fishing methods.

Zelenyi Svit

The ecological movement Zelenyi Svit (Green World) started in Ukraine in 1988, following the environmental disaster caused by the Chornobyl nuclear reactor in 1986. Today, Zelenyi Svit campaigns on a wide variety of environmental issues and is part of the international network called Friends of the Earth – the largest group of non-governmental organisations in the world.

Zelenyi Svit works on a number of projects, both large and small, at international and national levels. For instance, from 2004 to 2005 it ran a campaign to stop the hunting of migrating birds in spring. Zelenyi Svit has also pushed for better management of Ukraine's forests. More recently, the organisation was involved in a campaign to regulate biotechnology in the food and agriculture industries. It wanted to prevent scientific progress from turning into a giant genetic experiment. Young members held workshops in schools and universities to highlight the issues.

Zelenyi Svit's main aim is to protect the environment, but it is also concerned about human rights. It encourages public participation in decision-making about environmental projects and demands freedom of information about environmental issues. It argues that to preserve the environment for the future, it is important that we all understand the consequences of decisions that are made today.

Ex.8.22. Answer the questions to the text above.

1. Which events prompted people to form Greenpeace and Zelenyi Svit?
2. What has each group done to protect trees?
3. What have they each done to protect wildlife?
4. What did Zelenyi Svit do to publicise their concerns about biotechnology?
5. Which group tries to improve communication about environmental issues?

Ex.8.23. Choose the correct prepositions.

1. The law prevents factories *from* / *for* polluting the rivers.
2. Greenpeace approved *of* / *on* the policy.
3. Many people objected *by* / *to* the road building plans.
4. We are concerned *on* / *about* climate change.
5. Zelenyi Svit will work *to* / *on* new campaigns soon.

Ex.8.24. Choose appropriate time phrase and put the verbs into the correct tense.

The World Wildlife Fund is currently launching its most important campaign ever to help protect our vanishing species of wildlife from extinction. *Before* / *As soon as* the turn of the century there ... (be) more than 40,000 tigers in India, while now there are around 3,750. *Before* / *Until* twenty years ago the number of Black Rhinos ... (exceed) 60,000. Now, less than 2,500 remain. *As long as* / *As soon as* animal habitats continue to be burned, polluted and destroyed, species ... (continue) to disappear. *While* / *When* there ... (be) still a demand for illegal rhino horns and tiger bones, the hunting of wildlife will continue. *By the time* / *Every time* people ... (become) aware of the situation, it may be too late. We must act now *before* / *until* these animals ... (disappear) forever. That's why WWF is urging all governments to get tough on illegal traders. *Every time* / *While* a crime against wildlife ... (be exposed), we are one step closer to our goal. If you believe that we must do all we can to stop this destruction, join the fight today and support the WWF campaign. Your gift will go directly to our vanishing species programme. Please, support this crucial work. WWF can't fight alone.

Ex.8.25. Choose the correct item to complete the sentences.

1. Zoologists work hard to ... endangered species.
a) protect b) shelter c) cover d) support
2. Greenpeace is going to release a(n) ... on water pollution.
a) edition b) issue c) publicity d) report
3. The tropical ... of Africa need to be protected from destruction.
a) regions b) states c) places d) sites
4. To improve the ... of the water, use a water-purification tablet.
a) standard b) amount c) quantity d) quality
5. Acid rain has caused a lot of ... to Europe's trees.
a) wreck b) ruin c) damage d) disaster
6. Five world leaders are due to attend the ... meeting in London.
a) tip b) top c) summit d) peak

Ex.8.26. Use the word given in brackets to form a word that fits in the gap.

Mass Protest in City Centre

Many 1)... (*visit*) to the city yesterday were surprised to find the roads blocked by 2)... (*protest*). Around ten thousand people took to the streets to try to persuade 3)... (*politics*) to take seriously recent warnings from 4)... (*environment*). The protesters claim that unless something is done urgently about the 5)... (*protect*) of our coastline, it is highly likely that many 6)... (*danger*) species of bird will disappear. Among those facing 7)... (*extinct*) is the rare puffin, which has seen its numbers reduced enormously over the past 50 years. Some 8)... (*science*) say that unfortunately it may already be too late for this bird, but immediate action is needed to ensure the 9)... (*survive*) of other rare birds. The 10)... (*destroy*) of habitats all along our shores and the effects of 11)... (*globe*) warming have been blamed.

Ex.8.27. Do the quiz and find out if you behave in a proper way to help save our planet.

How Green are You?

1. Do you sort out glass, paper, plastic bottles and cans?
a) Yes, always b) Sometimes c) Never

2. Do you buy fair trade products or organic or local food?
a) Yes, always b) Sometimes c) Never, it's too expensive
3. Do you use your own shopping bags?
a) Yes, always b) Often c) Once in a while
4. Do you recycle light bulbs and used batteries?
a) Yes, always b) Sometimes c) Never
5. Do you always dispose of garbage in a proper way?
a) Yes, always b) Most of the times
c) Sometimes I don't pay attention
6. Do you bother picking up other people's litter?
a) Yes, always b) Sometimes c) Never
7. Do you switch off the lights when you leave a room?
a) Yes, always b) Sometimes c) Never
8. Do you switch off other electric appliances at night?
(TV, computer, etc.)
a) Yes, always b) Sometimes c) Never
9. Do you put on warmer clothes when it's cold instead of putting
on the heating?
a) Yes, always b) Sometimes
c) Never, I prefer putting the heating on more
10. Do you have showers instead of baths?
a) Yes, always b) Often c) Never
11. Do you close the tap while you brush your teeth?
a) Yes, always b) Sometimes c) I never think about it
12. Do you use public transport or a bike or walk when possible?
a) Yes, always b) Sometimes c) Never
14. Do you have and use a composter at home?
a) Yes b) No

Ex.8.28. For questions 1–16, decide which word A, B, C or D best fits each space.

Why don't the British cycle? Only a quarter of the 1)... twenty million bicycles in the country are thought to be in 2)... use. In Denmark, which is flatter but no darker or rainier than Britain, twenty per cent of all journeys are made by bicycle, while in Britain the 3)... is only 5 %. The government is trying to 4)... this. It is hoped that a grant

of millions of pounds from the National Lottery will 5)... more people to use their bikes. The money will be used to 6)... for a 6,500 mile national network of cycle tracks. Britain needs to 7)... environmentally friendly schemes such as this. The southern third of the country is one of the most 8)... areas of the world. Environmentalists make it 9) ... to build new roads, and 10) ... roads are very overcrowded. One official committee described the growth of motor transport as 'possibly the 11)... environmental threat to the UK'. The 12)... of building the cycle tracks is to motivate people to use their bicycles instead of their cars. However, the new tracks are being built 13)... cities and not through them. This 14)... that only long distance journeys may be easier and safer. Those cyclists who want to 15) ... inside cities will still be in danger of 16) ... their lives on busy roads every time they use their bicycles.

- | | | | |
|----------------|--------------|-------------|---------------|
| 1. A counted | B numbered | C estimated | D guess |
| 2. A right | B regular | C normal | D proper |
| 3. A size | B portion | C figure | D part |
| 4. A improve | B succeed | C excel | D help |
| 5. A support | B activate | C boost | D encourage |
| 6. A cost | B give | C pay | D afford |
| 7. A do | B introduce | C commence | D make |
| 8. A full | B loaded | C occupied | D crowded |
| 9. A rough | B uneasy | C stiff | D difficult |
| 10. A existing | B prevailing | C living | D left |
| 11. A hardest | B greatest | C grandest | D strongest |
| 12. A aim | B function | C design | D course |
| 13. A from | B in | C among | D between |
| 14. A tells | B says | C means | D defines |
| 15. A travel | B wander | C tour | D follow |
| 16. A expiring | B losing | C missing | D terminating |

Ex.8.29. Read the text and choose the best option to complete the sentence.

A green wedding is ...

- one in which the bride and groom wear green-coloured clothes.
- one that takes place in a park.
- one which aims to reverse damage to the environment.

My Green Wedding

The dress came from a charity shop, the food served at the wedding reception was organic and the guests had to offset their air miles. Ian Herbert reports on the couple who got married without damaging the environment.

For the bride and groom who dream of flying their whole family to the island of Barbados for a huge celebration, the idea of a green wedding must sound as welcome as a bad speech by the best man followed by a fight during the wedding reception. But a young groom's decision to buy his bride an engagement ring with a conflict-free diamond resulted in their ethical wedding recently – the latest in a growing number.

Joe and Jessica decided to put the environment at the heart of their wedding day. Jessica found a £70 wedding dress from one of the charity Oxfam's seven bridal shops and asked those relatives flying in from Australia and Switzerland to offset the carbon emissions of their flights. A green 1948 Bentley car which had been converted to gas replaced the usual gas-guzzling wedding limousine. Out went the wedding invitations and in their place was a 'Jessicaandjoe' website from which guests could order gifts and get directions to the wedding venue.

An increasing number of couples are choosing to have a green rather than white wedding because of the awareness of the colossal carbon footprint attached to their big day. The Climate Care Group estimates that the average wedding emits 14.5 tonnes of carbon dioxide – a huge amount: the entire carbon footprint of the average Briton stands at 10.92 tonnes of carbon dioxide.

'People tend to think that green events are going to be a bit dull and boring', said Ruth Culver, whose Green Weddings organisation is the first of its kind to focus the happy couple on their carbon footprint. 'However, a green wedding can be just as wonderful or fabulous as any other wedding'.

At first Mrs Randall was a bit concerned about her decision to buy a second-hand silk dress from a charity shop. 'I wasn't sure how people would feel about it. I was rather worried about what the response would be. But the reaction was amazing when I told people where it was from', she said. The full event cost £3,000 which is a fraction of the cost of the £20,000 of consumption attached to the average big day in Britain.

True to their eco-principles, the couple are honeymooning in Dorset, in the south-west of England, cutting out the biggest environmental cost connected with most weddings – the overseas holiday which follows. Their presents, which have all gone straight to the developing world via Oxfam, include a donkey, three healthcare workers and 125 planted trees.

Ex.8.30. Which aspect of the wedding is not mentioned in the text?
Car, dress, flowers, food, guests, honeymoon, invitations, ring.

Ex.8.31. Decide if the statements are true or false according to the text above.

1. An increasing number of couples are choosing to have a green wedding.
2. Joe and Jessica sent wedding invitations to their guests.
3. All their relatives live abroad.
4. It is generally believed that green weddings are boring compared to ordinary weddings.
5. Joe and Jessica's green wedding cost less than an average wedding.
6. They gave some of their wedding presents to a charity shop.
7. They spent their honeymoon in Switzerland.
8. They hired a limousine for their wedding.
9. Jessica bought a second-hand wedding dress.
10. She felt unsure about her choice of wedding dress when she first bought it.

Ex.8.32. Do these words and phrases from the text refer to things which are good for the environment or bad for it?

- 1) colossal carbon footprint
- 2) eco-principles
- 3) ethical
- 4) gas-guzzling
- 5) green
- 6) offset carbon emissions
- 7) organic
- 8) high environmental cost
- 9) high consumption

Ex.8.33. Find words with these meanings in the text above.

Paragraph A

- 1) a special occasion that is enjoyable
- 2) a party to celebrate a marriage

Paragraph B

- 3) a place where an event takes place

Paragraph C

- 4) very large
- 5) boring

Paragraph D

- 6) very surprising
- 7) a very small amount
- 8) the amount used
- 9) removing

Ex.8.34. Complete the sentences with the phrases in the box.

<i>awareness of, concerned about, connected with, worried about, followed by</i>
--

1. A wedding ceremony is generally ... a reception.
2. Joe and Jessica are very ... the environment and doing as much as they can to reduce their carbon footprint.
3. Green is an adjective which means '... the environment'.
4. At first Jessica was anxious and ... buying a second-hand wedding dress.
5. There is increasing ... a range of environmental issues such as global warming.

Ex.8.35. Discuss these ideas for improving the environment.

1. Fine people if they do not recycle household waste.
2. Charge people for each mile they drive.
3. Charge people to take their cars into the city centre.
4. Make people get part of their energy from renewable sources such as solar or wind power, or bio-fuels.
5. Make flights more expensive by taxing aircraft fuel.

Ex.8.36. Read the text. What does the author think about the ideas in Ex.8.36?

Going Green

How green are you? Being green used to mean that you were young and inexperienced. Now people who call themselves green seem to think that they know better than the rest of us. But just how wise are these new Greens? How well do their ideas work in practice?

Take the example of what happened this week to Donna Challice, mother of three, from Exeter. She was actually taken to court by her local council for not recycling her rubbish. She was charged with putting food in the green recycling bin which is intended for cans, paper, plastic and glass. She faced a fine of up to £1,000 and the court case cost much more than that. What a waste of the Court's time and money. The reality is that recycling household rubbish is a waste of all our time. It takes hours and makes very little difference to the planet. Only 5 % of our waste is made up of household rubbish, while a massive 60 % is agricultural and industrial. Why doesn't the council do something about that first!

And it isn't only local government that is anxious to be green. We are surrounded by green thinkers. Have those people who refuse to accept nuclear energy thought about what renewable energy means? They say that 20 % of our energy has to come from renewable sources such as wind and solar power. Can you imagine what our countryside will look like? There will be forests of giant wind turbines and nothing in the fields except oilseed rape to make bio-fuel. There is no real alternative to using more nuclear energy, so why don't we focus on building new safer nuclear plants?

The European Parliament has just agreed to put new taxes on airlines – to stop pollution and cut the growing number of cheap flights. Think about what this means. For the first time in history, it isn't only the rich and wealthy that can fly to other parts of the world. Now people from all backgrounds have the chance to learn and see things that their grandparents could only read about – but the European Parliament wants to stop all that.

And don't get me started on congestion charges and road pricing! Since the mayor of London, Ken Livingstone, introduced a charge to

drive into the city every other city in the country has been thinking of doing the same. But London is the only city in the country that actually has a decent public transport system. Anywhere else people would never get to work at all! The government seems determined to get us out of our cars. The latest idea is to charge everyone up to £1.34 a mile to drive their own cars. But what are we supposed to use instead? I'd take the train to work if it wasn't always hours late and so crowded that I'm forced to stand all the way. Thank goodness I've got a car and the choice is mine.

You have to be green, in the old sense of the word, to think that these ideas are a step forward. What a load of old rubbish!

Ex.8.37. Match the phrases containing word 'green' with their meanings.

- | | |
|--------------------------------------|--|
| 1) be green | a) to give permission for someone to start a project, a new system, etc. |
| 2) have green fingers | b) a piece of land that has never been built on before |
| 3) give somebody/get the green light | c) to be good at making plants grow |
| 4) green belt | d) warming of the air around the earth as a result of the sun being trapped by pollution |
| 5) greenfield site | e) being young and having lack of experience (informal) |
| 6) greenhouse | f) an area of land around a city where building is not allowed, in order to protect fields and woods |
| 7) greenhouse effect | g) a glass building used for growing plants that need warmth, light, and protection |

Ex.8.38. Choose the correct words to form collocations.

- 1) *get / go* involved in wildlife conservation
- 2) *spend / invest* in solar or wind power
- 3) *use / do* more public transport
- 4) *ban / refuse* the use of plastic bags

- 5) *moderate* / *reduce* packaging of products
- 6) *reorganise* / *recycle* our waste
- 7) *increase* / *grow* international cooperation
- 8) *support* / *strengthen* sea defences
- 9) *make/develop* renewable energy sources

*Ex.8.39. Put these words into two categories: **fossil fuels** and **renewable energy**.*

Coal, oil, bio-fuels, solar power, gas, wind power, hydro power, nuclear power.

Ex.8.40. Read the text and answer the questions below.

Alternative Energy Sources

The enormous demand for energy in the modern world is exhausting the planet's known resources. And unfortunately, new energy sources have become increasingly difficult to find. Current research and development are investigating alternate sources of clean, inexpensive power that may eventually supply much of the energy.

Solar power is often mentioned as the logical and proper alternative to exhaustible sources of energy. And indeed, the amount of radiant energy that strikes the Earth's surface is far more than is needed. For the generation of electricity, however, there are serious problems to be solved. To collect and concentrate the energy by reflectors and converters of present efficiency is the major difficulty. Obvious problems come to mind, related to unfavourable weather conditions, energy storage requirements, and the use of the shadowed space. The desert is a logical place to locate solar devices because of open space, isolation, and the frequency of sunny days, but transmission costs for electrical power to urban centres would be excessive.

Wind power available throughout the Earth is considered to be equivalent to 100 billion watts per year. For centuries, windmills have converted the energy of the winds into useful forms of power chiefly to pump water, grind grain or generate electricity. Although they play a small role in industrialized countries, modern efficient windmills are being used in some areas where strong winds prevail to produce power.

For hundreds of years, the moving waters of the tides turned mills that ground grains. Utilizing tidal power to generate electricity, however, did not begin on a grand scale until 1966, when France began full operation of the world's first tidal-power plant, located on the Rance River. The site for a tidal-power plant requires water flowing in and out with each tide, and a narrow bay or river that can be closed off by a dam. To maintain the flow of electricity, the falling water operates pumps that put water into storage ponds for release between tidal cycles.

Geothermal energy is known to be used for heating at a number of places around the world. Heating with geothermal waters, by transferring their heat through a heat exchanger to fresh water, was applied in Hungary and Iceland. Cost of such heating proved to be much cheaper than heating by any other known fuel. The most important characteristic of geothermal energy is its potential availability in truly enormous amounts.

Oil, coal, natural gas, and nuclear power currently provide about 80 percent of the world's energy needs. For the next 25 to 50 years, only solar power, and perhaps nuclear fusion show promise of replacing a large slice of the energy pie. As nonrenewable energy sources are depleted, alternative sources will become increasingly important to keep the lights on and the wheels turning.

1. Why is solar power considered the logical and proper alternative to exhaustible sources of energy?
2. What are the major difficulties and problems of collecting and concentrating solar energy?
3. What is the best logical place to locate solar devices and why?
4. How have windmills been used for hundreds of years?
5. What features should be taken into consideration to make a tidal power plant efficient, reliable and economical?
6. What is the possible application of geothermal energy and why?
7. What may fossil fuels be replaced by in future?

Ex.8.41. Decide if the following statements are true, false or not given.

1. As the energy sources of the world are decreasing, the scientists have to find new sources of energy in the nearest future.

2. Developing more efficient methods of recovering, transporting and using energy could help energy resources last longer.

3. There are several natural sources of energy, all of them are exhaustible.

4. It is the sun that is an unlimited source of energy. The energy from the sun may be converted into heat to warm buildings.

5. Modern windmills are efficient enough to be set everywhere around the world.

6. To construct a tidal-power plant location peculiarities are essential.

7. Geothermal energy can provide an inexhaustible source of power.

8. Renewable energy sources are abundant in all the regions of Ukraine.

Ex.8.42. Make up adjectives adding the following prefixes: il-, im-, un-, in-, sub-, non- and translate them into your native language, e.g.: fortunate – unfortunate.

Expensive, important, probable, legal, expected, certain, efficient, complete, terranean, exhaustible, experienced, marine, limited, possible, sufficient, common, direct, proper, available, favourable, renewable.

Ex.8.43. Make up as many expressions as possible and use them in your own sentences.

to convert	energy
to conserve	heat
to save	planet's resources
to recover	paper
to store	energy consumption
to employ	solar energy
to investigate	the waste

to rectify	biomass
to reduce	heat and chemical changes
to utilize	alternate sources of power
to recycle	the radiation
to tap	the loss of energy
to exhaust	economical ways
to harness	efficient methods
to develop	

Ex.8.44. Write an essay on one of the following topics.

1. Energy of the future
2. Possible uses of solar energy
3. Using alternate energy sources in Ukraine
4. Advantages and disadvantages of alternate energy sources
5. Challenges presented by the earth's diminishing energy supply

Ex.8.45. Complete the information about the environment. Use the words in the box.

*improve, decompose, oil, organic, ozone, pesticides, recycles,
renewable, ultra violet, warming*

1. Plastic bags can take up to 1,000 years to When we go shopping, we should always take a bag with us.

2. The ... layer stops ... light from the sun. It's between 17 and 25 kilometres above the surface of the Earth.

3. About 90 % of the world's energy comes from ... , coal and gas. One problem is that they are not ... – they will eventually run out. Another problem is that when we burn them they cause global

4. At the moment the EU only ... about 45 % of its waste. It wants that figure to be between 50 and 80 percent.

5. On non-organic farms, farmers use more than 400 different These can kill wild animals and birds, and also cause water pollution. If more people bought ... food, this would help to ... the environment.

REFERENCES

1. Міняйлова А. В., Шляхтіна О. С. English for Ecologists : навч. посіб. Миколаїв : НУК, 2019. 156 с.
2. The New Book of Popular Science : in 6 vol. / Earth Sciences. Danbury : Grolier incorporated, Connecticut, 1998. V. 2. 522 p.
3. Cunningham W., Saigo B. Environmental Science. A global concern. 3rd edition. WCB Communication, Inc., 1995. 640 p.
4. Электронный словарь Abby Lingvo 2013. URL: <http://www.lingvo.ua/ru/>
5. Wikipedia: the free encyclopedia. 2001. URL: <http://en.wikipedia.org/>
6. Hill M. K. Understanding Environmental Pollution. CUP, 2004. 468 p.
7. Carattoli M. C. Nature & Environment. London : Rochmond Publishing, 2002. 65 p.

NOTES

Навчальне видання

**МІНЯЙЛОВА Алевтина Володимирівна
ШЛЯХТІНА Олена Семенівна**

SAVE THE PLANET

**Навчальний посібник з англійської мови
для студентів спеціальностей 101 «Екологія»
та 183 «Технології захисту навколишнього
середовища»**

(англійською мовою)

Коректор – М. О. Паненко

Верстка – Ю. С. Семенченко

Підписано до друку 17.09.2020 р. Формат 60х84/16.
Папір офсетний. Гарнітура Times New Roman. Цифровий друк.
Умовно-друк. арк. 10,70. Наклад 100. Замовлення № 0909-46.
Ціна договірна. Віддруковано з готового оригінал-макета.

Видавець і виготовлювач

Національний університет кораблебудування імені адмірала Макарова
просп. Героїв України, 9, м. Миколаїв, 54025

E-mail: publishing@nuos.mk.ua

Свідоцтво суб'єкта видавничої справи
ДК № 6402 від 19.09.2018 р.

Віддруковано в друкарні Видавничий дім «Гельветика»

73034, м. Херсон, вул. Паровозна, 46-а

Телефони +38 (0552) 39 95 80, +38 (095) 934 48 28, +38 (097) 723 06 08

E-mail: mailbox@helvetica.com.ua

Свідоцтво суб'єкта видавничої справи
ДК № 6424 від 04.10.2018 р.