**МИНИСТЕРСТВО СЕЛЬСКОГО ХОЗЯЙСТВА**

**И ПРОДОВОЛЬСТВИЯ РЕСПУБЛИКИ БЕЛАРУСЬ**

**ГЛАВНОЕ УПРАВЛЕНИЕ ОБРАЗОВАНИЯ, НАУКИ И КАДРОВ**

**Учреждение образования**

**«БЕЛОРУССКАЯ ГОСУДАРСТВЕННАЯ**

**СЕЛЬСКОХОЗЯЙСТВЕННАЯ АКАДЕМИЯ»**

**Кафедра иностранных языков**

***В. Л. Новицкая***

**АНГЛИЙСКИЙ ЯЗЫК**

**Environmental protection**

***Сборник текстов и упражнений на английском языке***

***для студентов всех специальностей 1-33 01 06 Экология сельского хозяйства, 1-74 02 03 Защита растений и карантин,***

***1-74 02 04 Агрохимия и почвоведение***

**Горки**

**БГСХА**

**2017**

УДК 811.111(075.8)

ББК 81.2 Англ

Н

*Рекомендовано методической комиссией*

*факультета международных связей и довузовской подготовки*

*26.12.2017 (протокол № 4).*

Автор:

преподаватель кафедры иностранных языков *В. Л. Новицкая*

Рецензент:

кандидат биологических наук, доцент кафедры сельскохозяйственной биотехнологии, экологии и радиологии  *Т.В.* *Никонович*

|  |  |
| --- | --- |
|  | **Новицкая В. Л.**  **Английский язык. Environmental protection:** сборник текстов и упражнений / В. Л. Новицкая. – Горки : БГСХА, 2017. – 35 с.  Приведены задания и упражнения по развитию разговорной речи на английском языке на основе текстов по защите окружающей среды.  Для студентов специальностей 1-33 01 06 Экология сельского хозяйства,  1-74 02 03 Защита растений и карантин,1-74 02 04 Агрохимия и почвоведения. |

**УДК 811.111(075.8)**

**ББК 81.2 Англ**

© УО «Белорусская государственная

сельскохозяйственная академия», 2017

**ВВЕДЕНИЕ**

Сборник текстов и упражнений предназначен для студентов специальностей 1-33 01 06 Экология сельского хозяйства, 1-74 02 03 Защита растений и карантин, 1-74 02 01 Агрохимия и почвоведение.

Цель сборника текстов и упражнений – научить читать, понимать и переводить литературу по специальности.

Сборник текстов и упражнений состоит из 8 уроков. Каждый урок включает словарь, текст А – для изучающего чтения, послетекстовые задания и текст В – для пересказа. Чтобы облегчить работу студента, тексты снабжены лексическим минимумом. После текстов следуют задания, закрепляющие основную лексику и грамматические структуры. Послетекстовые упражнения направлены на закрепление лексики и проверку понимания прочитанного. Упражнения этого раздела базируются на лексике предтекстовых заданий и предшествующих уроков, что обеспечивает ее повторяемость. В последнем упражнении каждого урока приведен текст для перевода и пересказа.

Пособие снабжено англо-русским алфавитным словарем, дающим не только специальную терминологию, но и значение большей части слов, использованных в текстах.

Сборник текстов и упражнений может быть использован как для самостоятельной, так и для аудиторной работы.

LESSON 1

Vocabulary

environment – окружающая среда

nutrient – питательное вещество

acidiеty – кислотность

phosphorus – фосфор

pollution – загрязнение

accumulate – накапливать

tissue – ткань

food chain – пищевая цепочка

migrate – переселяться, мигрировать

prey – добыча, охотиться

predator – хищник

robust – крепкий, здоровый, бодрый

resilient – упругий

deforestation – вырубка леса

drainage – дренаж

irreversible – необратимый

extinction – вымирание

Ex. 1. Read text A and answer the following question.

What are the most hazardous side-effects of improvement of the environment?

Text A

THE DAMAGED ENVIRONMENT – HOW LONG

WILL IT LAST?

Man has influenced the environment in three very different ways: a dramatic reshaping of the landscape to create efficient agriculture and urban life; a major interference in the biogeochemical cycles of carbon, nitrogen, phosphorus and metals changing the physics and chemistry of the environment through increased nutrient flows, acidification, global warming, and increased UV radiation; thousands of chemicals, foreign to the planet and its life forms, have been used extensively in the environment, some of them deliberately to poison life.

The pollution chain is the way that pollutants take from production into the environment over air and water. Some chemicals are easily taken up by life forms, they are bio-available, they may accumulate in organs and tissues, stay in the food chains as they migrate from prey to predator, even from the mother to the child. Many of them also end up in man.

Chemicals have special effects on ecosystems. An ecosystem might be completely disrupted if one key species is badly damaged, and prey-predator relationships are changed. Typically ecosystems hit by pollution lose diversity and biomass. At the same time environments that are less diverse, both as landscapes and as ecosystems, are more vulnerable to environmental impacts.

Compared to the 1950’s and 1960’s, when the threat from chemical pollution was first grasped seriously, much has happened. Many chemicals have been banned and new chemicals have been designed so they do not accumulate in ecosystems. But old chemicals still leak from the society into the environment, and new threats are continuously discovered. Lately pollutants that influence the sexual differentiation in animals, the so called endocrine disruptors, have been creating a new scene, a chemical panorama that seems more threatening than before. It is discussed whether endocrine disruptors, also called hormono-mimetic pollutants, can reach man and threaten his reproduction.

Environmental impacts interact in several ways, either to reinforce one another or sometimes dampen each other. Landscape changes make the environment more or less susceptible for eutrophication and acidification. For example a modernised monotonous production landscape enhances eutrophication since the factors that reduce nitrogen and phosphorus flows are absent. In the same time an ecosystem that has relatively few species is less able to withstand the impact of pollution and changes in general. The environment is more or less robust, that is more or less able to withstand impact. An environment that has changed but is able to go back to its original status after an impact has ceased, is called resilient.

Some of the impacts that man has had on the environment will last very long. Changes in infrastructure, roads, buildings etc, will last perhaps- to the next ice age that is many tens of thousands of years. Also landscape changes, e.g. deforestation and drainage, may be very long lasting forests will take hundreds of years to be more natural and a “virgin” forest will probably take a thousand years to establish itself. A chemical impact will only last as long as the chemical survives. However changes in the biogeochemical cycles will take hundreds or thousands of years for global impacts to adjust even if mechanisms are available.

Finally some changes are irreversible. To this category belongs for example the extinction of biological species. Even if we will in the long run be able to manage the environment to stop the continued degradation, it is already clear that our children will live in an environment that is a little less rich and a little less diverse than ours.

Ex. 2. Find the following terms in text A or in the glossary. In which meanings are they used in the text?

phosphorus drainage

accumulate extinction

acidification pollution

Ex. 3. Choose the correct preposition.

1. The pollution chain is the way that pollutants take from production

into the environment …… air and water. (over; by; on)

1. We will study how these types of pollution and environmental impact spread ….. the environment. (in; into; to)
2. At the same time environments are more vulnerable ….. environmental impacts. (to; on; at)
3. Some of the impacts that man has had ….. the environment will last very long. (to; on; at)
4. Our children will live ….. an environment that is a little less rich and a little less diverse than ours. (in; with; into)

Ex. 4. Mark the statements as true (T) or false (F). Correct the false statements, using the following phrases:

To my mind...

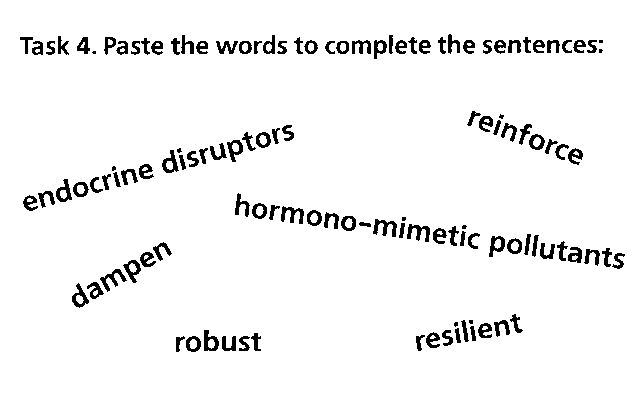
Personally, I am more inclined to think that ...

I am not entirely convinced that ...

I see things rather differently ...

1. The pollution chain is the way that pollutants take from the environment into air and water.
2. Typically ecosystems hit by pollution lose diversity and biomass.
3. Many new chemicals have been designed specially to accumulate in ecosystems.
4. Landscape changes make the environment not susceptible for eutrophication and acidification.

Ex. 5. Paste the words to complete the sentences:



1. Lately pollutants that influence the sexual differentiation in animals, the so called…………………………………………………………………., have been creating a new scene, a chemical panorama that seems more threatening than before.
2. It is discussed whether endocrine disruptors, also called …………………………….. can reach man and threaten his reproduction.
3. Environmental impacts interact in several ways, either to ……….. one another or sometimes ………………………………………. each other.
4. The environment is more or less …………………………………… that is more or less able to withstand impact.
5. An environment that has changed but is able go back to its original status after an impact has ceased, is called…………………………………...

**Ex. 6. Match synonyms.**

1. long continuance a. pollutant

2. contaminant b. to dampen

3. variety c. irreversible

4. to strengthen d. to withstand

5. to reduce e. longevity

6. to prohibit f. to enhance

7.to increase, to raise g. to ban

8. to resist , h. diversity

9. irreparable i. extinction

10. dying-out, disappearance j. reinforce

Ex.7. Read text B and prepare a short oral talk for the lesson on global market, global demand, global warming.

Text B

Global market**, global demand, global warming…**

In line with projected population growth and changes in dietary habits in favour of higher meat consumption, the global demand for food is expected to grow by up to 70 % in the coming decades. Agriculture is already one of the economic sectors with the largest environmental impact. This substantial increase in demand will unsurprisingly create additional pressures. How can we meet this increasing global demand while at the same time reducing the impacts of European food production and consumption on the environment?

Reducing the amount of food produced is not a viable solution.

The [EU is one of the world’s largest food producers](http://ec.europa.eu/eurostat/statistics-explained/index.php/Agricultural_production_-_crops), producing around one eighth of the global cereal output, two thirds of the world’s wine, half of its sugar beet, and three quarters of its olive oil. Any reduction in key staples is likely to jeopardise food security in the EU and in the world, and increase global food prices. This would make it harder for many groups around the world to access affordable and nutritious food.

Producing more food out of the land that is already used for agriculture often requires heavier use of nitrogen-based fertilisers, which in turn release nitrous oxide emissions and contribute to climate change. Intensive agriculture and fertiliser use also release nitrates to the soil and to water bodies. Although not directly linked to climate change, high concentrations of nutrients (especially phosphates and nitrates) in water bodies cause eutrophication. Eutrophication promotes algae growth and depletes oxygen in the water, which in turn has severe impacts on aquatic life and water quality.

Whether in Europe or the rest of the world, meeting the growing demand for food by using more land would have serious impacts on the environment and the climate. The areas most suitable to agriculture in Europe are already cultivated to a large extent. Land, especially fertile agricultural land, is a limited resource in Europe and across the world.

Converting forest areas into agricultural land is also not a solution as this process is a source of greenhouse-gas emissions. Similar to many other land-use changes, deforestation (currently occurring mainly outside the European Union) also puts biodiversity at risk, further undermining nature’s ability to cope with climate change impacts (such as absorbing heavy rainfall).

LESSON 2

Vocabulary

graze – пасти

biomass – биомасса

detritus – детрит

herbivore – травоядное

predator – хищник

carnivore – плотоядное животное

decomposer – редуцент

food web – пищевая сеть

omnivore – всеядное существо

trophic level – трофический уровень

fertilizer – удобрение

biodiversity – биоразнообразие

phosphorus – фосфор

nitrogen – азот

Ex. 1. Read text A and say what is true.

1. The text is about:
2. the use of energy on the whole.
3. the role of animals and plants in energy flow and circulation of the matter.
4. the role of nutrients in aquatic ecosystems.
5. The author comes to the conclusion that:
6. animals living on plant biomass are called grazers or herbivores.
7. the decomposers are in many ways the most important organisms in the ecosystem.
8. re-circulation of nutrients and other substances is essential to all ecosystems.

Text A

ECOSYSTEM ECOLOGY

Ecosystem ecology, sometimes referred to as system ecology, is concerned with the flow of energy and circulation of matter in a whole ecosystem, that is, how the whole system functions. The intimate couplings between the environment and the species living there will influence the balance of the ecosystem and the living conditions for its members. It is only by knowing how the whole system works that we are able to understand how changes in abiotic factors, that is environmental impacts, will affect a community of organisms.

Energy and biomass in an ecosystem - flow of energy and circulation of matter.

Organisms can use energy in several forms. Depending on the form of “food” they use, the systems contain several categories of plants and animals.

The majority of plants obtain their energy directly from sunlight using green chlorophyll and sometimes additional pigments (like the brown and red algae). Plants are the primary producers of the ecosystem. In their photosynthesis, they convert the energy from sunlight into energy stored in carbohydrates (sugar, starch, cellulose etc.) and other organic compounds. They build biomass in the form of roots, stems and leaves. In addition to sunlight they need water, carbon dioxide from the air and nutrients such as nitrogen, potassium and phosphorus from the ground.

Animals living on plant biomass are called grazers or herbivores. They fill the role of consumers, or primary consumers, in the ecosystem.

Those animals that live by catching other living animals are predators, or carnivores, also called secondary consumers.

Finally, bacteria, and other organisms living on dead organic matter, detritus, are called decomposers. Soil animals, such as earthworms make up the first stage in the decomposition of detritus, while fungi and bacteria take care of the final decomposition. By decomposing the organic matter they return the nutrients to mineral form and the organically bound carbon to carbon dioxide. The roots of plants can then again capture the mineral nutrients, and the circulation of chemical matters is closed. The decomposers are in many ways the most important organisms in the ecosystem. Plant growth in most terrestrial ecosystems is limited by the lack of nitrogen and in aquatic ecosystem often by lack of phosphorus. If the decomposers did not effectively re-circulate these nutrients, primary production would soon cease. Re-circulation of nutrients and other substances is thus essential to all ecosystems.

**Ex. 2. Choose the best variant to complete the sentences.**

1. The majority of plants obtain their energy directly from……………
2. water
3. sunlight
4. fertilizers
5. Ecosystem ecology is concerned with …………………………….
6. waste disposal
7. decomposing organic matter
8. flow of energy and circulation of matter in a whole ecosystem
9. Plants are
10. the primary producers of the ecosystem
11. the primary consumers of the ecosystem
12. the secondary consumers of the ecosystem

**Ex. 3. Complete the sentences using the words given below. Translate the sentences into Russian.**

1. Organisms can use … in several forms.
2. Plants are the primary producers of the … .
3. They build … in the form of roots, stems and leaves.
4. Those animals that live by catching other … are predators, or carnivores, also called secondary consumers.
5. Finally, bacteria, and other … living on dead organic matter, detritus, are called decomposers.
6. The … are in many ways the most important organisms in the ecosystem.

Organisms, ecosystem, energy, biomass, living animals, decomposers.

Ex. 4. Turn the following verbs into nouns with the help of suffix–**(t)ion**.

Model: to convene - convention

to circulate to decompose

to add to convert

to produce to eutrophicate

to relate to explain

Ex. 5. Finish the phrases.

1. to be concerned with a) the form of food they use
2. to depend on b) flow of energy
3. to live by c) final decomposition
4. to take care of d) consumers
5. to be limited by e) to understand
6. to be able f) catching
7. to fill the role of g) the lack of nitrogen

Ex. 6. Work in pairs. Read Text B as quickly as possible and put down as many terms as you can. Compare them with your partner's. Try to explain to your partner what they mean. Consult the glossary to check the meaning.

Text B

FOOD CHAINS AND FOOD WEBS

A feeding relationship in an ecosystem is called a food chain, while the totality of the chains constitutes a food web. Often the food webs are quite complex with many different feeding relationships. In addition to primary producers, herbivores and carnivores, omnivores are common in some ecosystems. Many bird species, such as finches and sparrows are examples of omnivores. In autumn they feed on seeds and are herbivores, but in summer they feed their offsprings on insects and are then predators. However, it is often possible to differentiate between the levels described. They are called trophic levels. In an ecosystem there are normally four trophic levels but there might be more or fewer.

From this description we can see the distinct difference between the transfer of energy and nutrients in the ecosystem. Energy enters the ecosystem through photosynthesis and is gradually lost as heat through the trophic levels.

Human use of ecosystem resources, for instance by agriculture, forestry or fishing has had dramatic effects on energy flow, nutrient circulation and biological diversity, locally as well as globally. Sustainability has been suggested as an overall aim for environmental protection work. This implies that our use of ecosystems should not jeopardise central ecosystem functions in the short or long run. The role of the ecologists is to try to establish levels of resource use, for instance fishing quotas that lead to sustainable use of the ecosystems.

To really know if human use of ecosystems is sustainable we need environmental monitoring.

This means that we carefully measure long-term changes in species diversity, nutrient levels and vital ecosystem functions.

LESSON 3

Vocabulary

domesticate – приручать

carrying capacity – грузоподъемность

viable – жизнеспособный

selection – выбор

wild ancestor – дикий предок

species – виды

mammal – млекопитающее

cultivate – культивировать

genetics – генетика

transgenic – трансгенный

gene – ген

biotechnology – биотехнология

Ex.1. Read Text 1 quickly. Choose the problems it focuses on:

* new genetic techniques introduced lately perspectives for genetics development
* insight into the history of genetics.

Text A

GENETICS – ANIMAL BREEDING AND GENETIC ENGINEERING

Early on, selection was used to improve the genetic properties of domesticated plants and animals. This trial and error process was slow, but still important for improving production. The relative success of “pre- scientific” breeding can be seen in the many varieties of dogs, horses, pigeons etc. that existed in early societies and up to the 1800s. With the establishment of Mendelian genetics a real breakthrough occurred in plant and animal breeding. The efficiency of agriculture and animal production increased several fold in the few decades that followed. A series of factors, among them better genetic properties, contributed and the importance of each one is difficult to establish, since they were so interlocked. The new varieties gave higher yields but also required the new techniques that were introduced simultaneously: fertilizers to promote growth, biocides to control pests and so on. In this way breeding new varieties became part of larger environmental impact of agriculture in general.

The new varieties, commonly called GMO’s, Genetically Modified Organisms, might thus have properties not thought possible until recently. From a very careful beginning when each introduction of a GMO in field trials was carefully considered from ethical and risk perspectives, there are now many GMO’s in full-scale use. One example is an oil seed plant with genes (from a bacterium) that allow them to resist and grow with a specific biocide (Roundup). This is sold together with the plant variety to control weeds. But genes are not only there to make the production of the crop more rational. Other introduced genes may improve the nutritional value of the plant, or make it contain specific substances.

Also animals can nowadays be given new genes by introduction of a small piece of DNA into the germ cell, the fertilized egg. Animals that develop from such eggs are called transgenic. Today transgenic mice are routine in the laboratories of biomedical research, while the production of transgenic larger animals is still a challenge for the researchers.

The use of GMO plants is not uncontroversial. One discussion concerns the risk that a gene artificially introduced into a GMO is transferred from the original plant to a wild species, especially if this is related to the cultivated one. This will most likely be possible and probably has already happened. The question is what is the next step. Most likely the wild species will lose the gene if it does not give the host a specific advantage. Protection against a biocide might be such an advantage, and then resistance properties might spread among the weeds against which it was directed. This would constitute a kind of “biological pollution” where genes are compared to chemicals, as pollutants.

A most relevant objection to the use of GMO’s seems rather to be on a political level.

Ex. 2. Mark the statements as true (T) or false (F). Correct the false statements, using the following phrases.

1. The earth is presently going through a period of climate change with decreased average global temperature.
2. Greenhouse gases are natural components of the atmosphere and contributes to the heat balance of the earth.
3. As a result a greenhouse, that is the earth, becomes colder than it otherwise be.
4. Today we have the warmest climate since the 17th century.
5. Ocean currents play an important role for the regional climates.
6. The effect of greenhouse gases has been known since the end of the 18th century.
7. Energy production is therefore indirectly the major cause of global warming.

Ex. 3. Match the beginning of the sentence with its logical ending.

1. Better genetic properties contributed to…….
2. Genomes of plants and animals were developed due to…….
3. Fertilizers were used…….
4. Animals can be given new genes by…….
5. Genes not only improve the nutritional value but…….
6. Individual farmers cannot protect their rights and…….
7. The use of GMO plants may result in…….
8. to promote growth of plants
9. a kind of “biological pollution”
10. industrialization of agriculture
11. new genetic techniques
12. introduction of a small piece of DNA into the germ cell
13. the efficiency of production
14. also make the production of the crop more rational

Ex. 4. Insert the necessary prepositions.

1. Selection was used … improve the genetic properties … domesticated plants and animals.
2. The efficiency … agriculture and animal production increased several fold … the few decades that followed.
3. This trial and error process was slow, but still important … improving production.
4. Animals that develop … such eggs are called transgenic.
5. But genes are not only there to make the production … the crop more rational.
6. The use … GMO plants is not uncontroversial.
7. A most relevant objection … the use of GMO’s seems rather to be … a political level.

Ex.5. Choose the best variant to fill in the blanks.

1. A limited access to suitable wild plants and animals for …….…… was a key difficulty.

a. utilisation; b. fertilising; c. domestication; d. upbringing

1. Agriculture and animal production had dramatic environmental …….

a. influences; b. reasons; c. difficulties; d. consequences

1. The environmental……………is increasing as the areas taken into use for domesticated animals and plants increases.

a. effort; b. source; c. impact; d. affect

1. Early on……………was used to improve the genetic properties of domesticated plants and animals.

a. selection; b. specification; c. specialization; d. choice

1. The new …………………………gave higher yields.

a. variations; b. varieties; c. differences; d. outcomes

1. ………………….in general refers to the use of living cells or organisms in technical contexts,

a. biology; b. biotechnology; c. genetics; d. botanies

Ex.6. Read text B and prepare a short oral talk for the lesson on domestication of plants and animals.

Text B

DOMESTICATION OF PLANTS AND ANIMALS.

Domestication of plants and animals evolved piecemeal over quite a long period, in only a few areas in the world, but apparently on several independent occasions, as genetic analyses show. The very limited access to suitable wild plants and animals for domestication was a key process, as was the development of technologies of sowing, growing, harvesting, etc., and selection of crops and animals. As the human population increased the sedentary and agricultural lifestyle became almost the only one that could support a society.

Agriculture and animal production had dramatic environmental consequences. Obviously if a piece of land is turned from “wild” with only some 0.1% of the biomass useful to man, to become cultivated where 90 % becomes harvestable crop or animal, this constitutes a large scale exchange of biology and environment to favour some species rather than others. The environmental impact of this is increasing as the areas taken into use for domesticated plants and animals increase. Today a very large proportion of land is used either for crop or animal production, and it is estimated that some 90 % of all land higher animal biomass is domestic.

The process of domestication has continued all the time since its beginning. At a later stage the American continents contributed e.g. the potato and corn while the Asian domestication of rice is very old. More recent is e.g. domestication of fruit trees, bushes, and other plants that require several years’ cultivation before they can be harvested. Some resources are still used without or with only minor efforts of domestication, e.g. many woods and forests, some wild berries and bushes and most importantly marine resources. However agriculture is a major field where domestication of animals for food production is taking place today.

LESSON 4

Vocabulary

global warming – глобальное потепление

green house gas – парниковый газ

fluctuate – колебаться

energy – энергия

consumption – потребление

fossil fuel – ископаемое топливо

enhanced greenhouse effect – усиленный парниковый эфект

Text A

A PERIOD OF CLIMATE CHANGE

The earth is presently going through a period of climate change with increased average global temperature. This is called global warming. Today we have the warmest climate since the 14th century. Is it natural or caused by environmental impact by man? The key components in the discussion are the so-called greenhouse gases, which make the global atmosphere work like the glass in a greenhouse: they let light in but not heat radiation out. As a result a greenhouse, that is the earth, becomes warmer than it otherwise be.

But there are many other factors that influence the global climate. Natural variations have caused, as we know, both glaciation and warmer periods. During the glaciations the average global temperature is only some 4 or 5 degrees lower than at present. This tells us that the temperature on Earth is a finely tuned system and even small changes might have dramatic consequences. It is not well understood what causes the natural climate fluctuations. Some factors have been identified. Changed solar influx caused by varied solar activity and astronomical long-term variations is one category of factors. Changes on earth are another. In 1991 the eruption of the Volcano Pinatobo in the Phillipines ejected enough ash and sulphate particles to cause an increase in the aerosol in the atmosphere and a temperature drop of about 1°C for one year. Another factor is the amount of cloud cover, which influences the albedo of the planet, which in turn influences the climate. Ocean currents play an important role for the regional climates.

Greenhouse gases are natural components of the atmosphere and contributes to the heat balance of the earth. The most important of the greenhouse gases is water vapour; second comes carbon dioxide. The concentration of this gas has steadily increased, which might explain part or all of the temperature increase. Enormous amounts of carbon dioxide have been transferred to the atmosphere since the large scale combustion of coal, oil and other fossil fuel started with industrialization some 200 years ago.

The effect of greenhouse gases has been known since the end of the 19th century, when the Swedish chemist Svante Arrhenius first suggested that they would lead to global warming. Today sophisticated computer models, climate models, are used to assess the importance of each of the many factors that influence the climate on earth. In summary there is now near consensus not only that there is an increase in global average temperature, but also that the elevated concentrations of greenhouse gases, most importantly carbon dioxide, is the major reason for this, due to an enhanced greenhouse effect. Energy production is therefore indirectly the major cause of global warming.

Climate change is generally regarded as the most important environmental problem of our time.

Ex. 1. Make collocations of the following words with have, make or take.

Model: to have consequences

consequences

place

years

use

influence

steps

it possible

properties

Suggest some more collocations with the same verbs and illustrate their meaning with the sentences of your own.

Ex. 2. Complete the following sentences with the collocations from Ex. 1. Use the correct form of have, make, take.

Model: Genetic farming made it possible to produce biological pharmaceuticals.

Genetically modified organisms might………not thought possible earlier.

New genetic techniques …………to design the genomes of plants and animals.

The Pacific stream, called II Nino, …………on the climate of the southern Hemisphere.

Even small changes might dramatic ……for Earth.

First to set up an international programme to reduce

greenhouse gas emissions.

Today people of a very large proportion of land for either crop or animal production.

Ex. 3. Fill in the missing prepositions.

1. Is it natural or caused … environmental impact … man?
2. During the glaciations the average global temperature is only some 4 or 5 degrees lower than … present.
3. Changes … earth are another.
4. Ocean currents play an important role … the regional climates.
5. The most important … the greenhouse gases is water vapour; second comes carbon dioxide.
6. Today sophisticated computer models, climate models, are used .. assess the importance … each … the many factors that influence the climate … earth.

Ex. 4. Mark the statements as true (T) or false (F). Correct the false statements, using the following phrases.

1. The earth is presently going through a period of climate change with decreased average global temperature.
2. Greenhouse gases are natural components of the atmosphere and contributes to the heat balance of the earth.
3. As a result a greenhouse, that is the earth, becomes colder than it otherwise be.
4. Today we have the warmest climate since the 17th century.
5. Ocean currents play an important role for the regional climates.
6. The effect of greenhouse gases has been known since the end of the 18th century.
7. Energy production is therefore indirectly the major cause of global warming.

|  |  |  |
| --- | --- | --- |
| DEGREES OF COMPARISON | | |
|  | Comparative degree | Superlative degree |
| I | I | I |
| big | bigger | the biggest |
| busy | busier | the busiest |
| happy | happier | the happiest |
| narrow | narrower | the narrowest |
| clever | cleverer | the cleverest |
| II | II | II |
| important | more important | the most important |
| likely | more likely | the most likely |
| III | III | III |
| good, well | better | the best |
| bad | worse | the worst |
| many, muсh | more | the most |
| little | less | the least |
| far | farther, further | the farthest, the furthest |
| old | older, elder | the oldest, the eldest |

Ex. 5. Fill in the correct form of the words in brackets (comparative or superlative).

1. The Volga is…………(long) river in Europe.
2. Life in the country is…………(relaxing) than in the city.
3. He is one of…………(rich) people in the world.
4. My house is…………(modern) than yours.
5. The weather today is……………(good) than it was yesterday.

Ex. 5. Put the adjectives into comparative and superlative degrees. Make all necessary changes.

Model: Today we have warm climate. - Today we have warmer climate that ever before. Today we have the warmest climate since the 14 century.

1. The earth is becoming warmer.
2. During the glaciations the average temperature is low.
3. Only a small part of total carbon dioxide is stored in the atmosphere.
4. Two bad flooding events took place in Europe.
5. Extensive research activities are ongoing to understand well climate change.

Ex. 6. Read text B and prepare a short oral talk for the lesson on *competing demands.*

Text B

COMPETING DEMANDS

It is clear that the world will need to produce more food and that key resources are limited. Agriculture has high impacts on the environment and the climate. Moreover, climate change affects – and will continue to affect – how much food can be produced and where.

Who gets to produce what and where is a socio-political question and is likely to become more controversial in the future. The global competition for these essential resources, especially with the pending impacts of climate change, is driving developed countries to purchase large patches of agricultural land in less-developed countries. Such land purchases and climate change impacts raise questions about food security in developing countries in particular. Food security is not only a matter of producing sufficient quantities of food, but also of having access to food of sufficient nutritional value.

This complex problem requires a coherent and integrated policy approach to climate change, energy, and food security. Faced with climate change and competition for scarce resources, the entire food system will need to transform itself and be much more resource efficient while continuously reducing its environmental impacts, including its greenhouse-gas emissions. We need to increase yields while reducing our dependence on agrochemicals, to reduce food waste, and to reduce our consumption of resource-intensive and greenhouse gas-intensive foods such as meat.

In doing this, we must also remember that farmers can play a key role in maintaining and managing Europe’s biodiversity. They are also a critical component of the rural economy. Therefore, policy measures to tackle this highly complex problem of food and the environment should take into consideration agriculture’s impacts on the environment and its socio-economic importance for many communities.

LESSON 5

Vocabulary

ozone – озон

stratospheric – стратосферный

tropospheric – тропосферный

to delay – задерживать

ultra-violet, UV – ультрафиолетовый

solar radiation – солнечное излучение

involved in – вовлеченный в

depletion – истощение, исчерпывание, опустошение

chlorofluorocarbon – жидкий хлористый углерод

to inhibit – препятствовать, задерживать

ionizing – ионизирующий

abundant – изобильный, достаточный

oxidant – окислитель

compound – смесь

interact with – взаимодействовать (с)

implementation – исполнение

with regard to – относительно, что касается

provision – обеспечение, принятие мер, *юр.* положение, предусматривающее что-либо, условие (договора и т. п.)

Text A

STRATOSPHERIC OZONE DESTRUCTION,

TROPOSPHERIC OZONE AND ITS ROLE

Atmospheric ozone is mainly concentrated in the stratosphere and, despite its low concentration (107 volumes of atmosphere), it has an important role in maintaining the balance of the atmosphere. It also delay ultra-violet solar radiation, protecting living organisms on our planet, and plays an active part in the chemical reactions involved in neutralizing atmospheric pollution.

It has been established that the ozone content in the stratosphere is decreasing. Ozone depletion is associated with human activity, and primarily with the intensive use of chlorofluorocarbons (CFCS). CFCS present in the atmosphere create conditions which deplete ozone molecules.

When the ozone content decreases in the atmosphere, more solar UV-B radiation reaches the earth’s surface. As a result, plant growth is inhibited, and a number of diseases become more prevalent, including eye disorders, cancers, and various diseases caused by the weakening of human and animal immune systems. Another consequence is an increase in corrosion arid destruction of materials. Ionising radiation and chemical environmental pollutants place additional stress on the protective systems of living organisms, which results in lower resistance to UV-B radiation. Protecting populations from increased doses of UV- B radiation is an acute problem in Belarus, which includes some of the vast areas most severely affected by radiation as a result of Chernobyl catastrophe.

The lower atmosphere has abundant nitrogen oxides (O, NO2, etc.) of natural or anthropogenic origin. Ozone is a powerful oxidant and is chemically active. In some cases it performs a useful function by destroying organic compounds that cause atmospheric pollution, but in the lower atmosphere and on the earth’s surface (troposphere), ozone interacts with living organisms. Since tropospheric ozone destroys complex organic molecules and completes a large number of chemically active radicals, it is highly toxic and can cause serious damage to living tissue. Tropospheric ozone is a major component of smog, which can become corrosive. It is destroyed when it comes into contact with certain natural areas such as pine forests and tundra, and less rapidly so by contact with water surfaces.

The highly polluted atmosphere of large industrial cities is particularly favourable to the formation of tropospheric ozone.

Monitoring the increase in tropospheric ozone concentrations is now of great concern on a global scale. It should be pointed out that tropospheric ozone concentrations increase as the ozone layer as a whole becomes depleted.

Ex.1. Find in the text English equivalents to the following Russian words and word-combinations.

Атмосферный озон; поддерживать баланс атмосферы; было установлено, что; содержание озона; прежде всего; главным обра­зом, в некоторых случаях; следует отметить, что; присутствующие в атмосфере; защита населения.

Ex. 2. Find the antonyms to the following words.

Major, main, more, depletion, the balance of the atmosphere.

Ex. 3. Find the synonyms to the following words,

Quickly, break, result or effect, human and animal.

Ex. 4. Mark the following statements as true (T) or false (F).

1. Atmospheric ozone has a very important role for living organisms on our planet.
2. It plays an active part in the chemical reactions involved in neutralising atmospheric pollution.
3. Sulphur depletes ozone molecules.
4. When the ozone content decreases in the atmosphere, plant growth is inhibited.
5. Ozone is a powerful oxidant.
6. Tropospheric ozone is also very useful
7. The atmosphere of large industrial cities is highly polluted.
8. Belarus has international obligations, including in particular the introduction of ozone protecting technologies in industry.

Ex. 5. Answer the following questions.

1. What is the role of atmospheric ozone?
2. Is the ozone content in the stratospheric decreasing?
3. What happens when the ozone content decreases in the atmosphere?
4. Protecting populations from increased doses of UV-B radiation is an acute problem in Belarus, isn’t it?
5. Why is tropospheric ozone dangerous?
6. When is it destroyed?

Ex. 5. Write out from the text words and word combinations describing.

1. The role of atmospheric ozone;
2. Consequences of the ozone depletion;
3. The role of tropospheric ozone.

Ex. 7. Read text B and prepare a short oral talk for the lesson on agriculture and climate change.

Text B

AGRICULTURE AND CLIMATE CHANGE

Agriculture both contributes to climate change and is affected by climate change. The EU needs to reduce its greenhouse-gas emissions from agriculture and adapt its food-production system to cope with climate change. But climate change is only one of many pressures on agriculture. Faced with growing global demand and competition for resources, the EU’s food production and consumption need to be seen in a broader context, linking agriculture, energy, and food security.

Food is a basic human need, and a healthy diet is a key component of our health and wellbeing. A complex and increasingly globalised system of production and delivery has developed over time to meet our need for food and for different flavours. In today’s world, a fish caught in the Atlantic might be served within days in a restaurant in Prague alongside rice imported from India. Similarly, European food products are sold and consumed in the rest of the world.

LESSON 6

Vocabulary

plain – равнина

meeting point – зд. место пересечения

coniferous – хвойный

deciduous – лиственный

diversity – различие, разнообразие

landscape – ландшафт

bog – болото

habitat – родина ( животного, растения), естественная среда

glacial – ледниковый, ледникового происхождения

relief – рельеф

moraine – геол. морена

glaciated – геол. подвергшийся действию ледников

flat – плоскость, низина

upland – нагорный, лежащий внутри страны, вдали от моря

loamy – глинистый

spruce – (канадская) ель

hilly – холмистый

range – ряд, цепь (гор)

altitude – высота, возвышенность, высота над уровнем моря

turf – дерн, торф

plateau – плато, плоскогорье, плоская возвышенность

undulating – волнистый

swampy – болотистый

lowland – низменность, низина, долина

hummock – холмик

bayou – 1) рукав в дельте реки 2) ручей, протекающий через заболоченную местность

mining – горная промышленность, ведение горных работ

Text A

NATURE AND BIODIVERSITY

Belarus is situated in the East European Plain at the meeting point between two the geobotanical zones characterised as European coniferous (taiga) and European deciduous. Geography, history and climate have combined to create a wide diversity of natural landscapes within the territory. Belarus has some 10000 lakes, more than 9000 bogs, 20800 rivers and streams, and various types of soil and plant habitats.

The northern part of the country, Polesie, is characterised by highly contrasting landscapes which vary from young glacial relief and moraines, to glasiated plains and lake flats. Typical of this region are narrow river valleys, numerous lakes and upland bogs, and wet loamy soils. Forest communities are mostly represented by spruce and mixed spruce-broad-leaved forests. There are more than 2 500 lakes m the area, including a number of well-known groups (Naroch, Braslav, Ushachi, etc.)

The central part of the country is hilly (Grodnenskaya, Slonimskaya, Minskaya, Kopylskaya ranges) with average altitudes of 200-250m. Soils are mainly sandy and loamy, forests are mainly pine and mixed spruce and broad-leaved.

Landscapes in eastern Belarus are forested, with a characteristic relief alternating between plateau areas (between rivers) and undulating hills along river valleys. Agricultural soils are often turf and podzol types.

The southern part of the country is characterised by wide swampy lowlands (Polesskay and Pridneprovskaya Lowlands) separated by occasional moraine hummocks. This region is characterised by wide river floodplains, numerous bayou-type lakes, wet meadows, remnants of lowland oak-forests, and lowland bogs.

Human activity has greatly transformed the natural landscapes of Belarus. Major changes have occurred through urbanisation, mining and building development. A significant reduction in landscape diversity has also resulted from large-scale 1 and -development projects.

Natural vegetation covers 65,9% of Belarus, mostly as a combination of forest, meadow, wetland and scrub vegetation.

Ex.1. Answer the following questions.

1. Where is Belarus situated?
2. How can you prove that our Republic has a wide diversity of natural landscapes within the territory?
3. By what is the northern part of the country characterised?
4. What can you say about the central part of the country?
5. The southern part of the country is characterised by wide swampy lowlands, isn’t it?
6. What has greatly transformed the natural landscapes of Belarus?

Ex. 2. Find in the text English equivalents to the following Russian words.

Хвойный, лиственный, разнообразие, ландшафт, болото, большие и малые реки, почва, равнины, речные долины, широко­лиственный, восточная Беларусь, многочисленный.

Ех. 3. Fill in the gaps with the words from the text.

1. Geography, history and climate create a wide ... of natural landscapes within the territory of our Republic.
2. Typical of the northern part of the country are numerous lakes and upland ..., and wet loamy....
3. Forest communities are mostly represented by ... and mixed.
4. ... forests.
5. Agricultural soils in eastern Belarus are often ... and ... types.
6. The southern part of the country is characterised by wide .......

Ex. 4. Write out from the text words and word combinations describing:

1. a diversity of natural landscapes in Belarus;
2. agricultural soils in different parts of the Republic.

Ex. 5. Match the words on the left with their definitions on the right.

1. diversity a) inland scenery

2. landscape b) trees of the kind that bear cones

3. coniferous c) variety

4. deciduous d) ( area of) soft, wet, spongy

ground

5. glacial e) of ice or the ice age

6. bog f) ( of trees) losing their leaves

annually (esp. in autumn)

7. loam g) cause to take place, appear, one

after the other

8. alternate, v. h) fertile soil of sand and clay

9. to result from i) come about, happen, as a

natural consequence

Ex. 6. Read text B and prepare a short oral talk for the lesson on agriculture contributes to climate change.

Text B

AGRICULTURE CONTRIBUTES TO CLIMATE CHANGE

Before reaching our plates, our food is produced, stored, processed, packaged, transported, prepared, and served. At every stage, food provisioning releases greenhouse gases into the atmosphere.

However, agriculture in the rest of the world is moving in the opposite direction. Between 2001 and 2011, global emissions from crop and livestock production grew by 14 %. The increase occurred mainly in developing countries, due to a rise in total agricultural output. This was driven by increased global food demand and changes in food-consumption patterns due to rising incomes in some developing countries. Emissions from enteric fermentation increased 11 % in this period and accounted for 39 % of the sector's total greenhouse-gas outputs in 2011.

In addition to such efficiency gains, changes on the consumption side can help to further lower greenhouse-gas emissions linked to food. In general, meat and dairy products have the highest global footprint of carbon, raw materials, and water per kilogramme of any food. In terms of greenhouse-gas emissions, livestock and fodder production each generate more than 3 billion tonnes of CO2 equivalent. Post-farm transport and processing account for only a tiny fraction of the emissions linked to food. By reducing food waste and our consumption of emission-intensive food products, we can contribute to cutting the greenhouse-gas emissions of agriculture.

LESSON 7

**Vocabulary**

soil layer – почвенный слой

subject to – подверженный

prospecting – исследование, изыскание

mineral resources – недра, минеральные богатства

pipeline – трубопровод

hydroengineering – гидротехника

plateau – плато, плоскогорье

planar – плоский, плоскостной

linear – линейный

to leach – выщелачивать

ravine – глубокое ущелье

peat – торф

extraction – добыча

gravel – гравий

carbonated – насыщенный углекислотой

deposits – залежи, месторождения

strip-mined – в открытой добыче

rehabilitation – восстановление

Text A

DESTRUCTION AND CONTAMINATION OF SOILS

Land uses for whatever purpose frequently have negative effects resulting in the destruction or contamination of the soil layer. Soils in Belarus are particularly subject to erosion and the effects of mining activities (prospecting, production and processing of mineral resources), construction (roads, industries and housing, hydroengineering, pipelines etc). The soil layer in some regions has been substantially affected by land improvement activities.

Eroded lands and lands threatened by erosion cover a total of 3,995,600 hectares in Belarus. In some regions in the Minsk, Novogrudok, Gorodok and Vitebsk districts, the Orsha-Mogilyov plateau and Polesie, up to 40% of all lands are eroded, and the percentage is still higher for arable land. In the central and northern parts of the country, planar and linear water erosion is widespread, while the southern part is more particularly affected by wind erosion.

Water erosion on hillsides leaches up to 15 tons of the soil’s fertile layer per hectare each year. Soil fertility, and therefore the productivity of agricultural crops, are therefore decreasing. Crop yield losses can be as high as 50-70% on heavily leached soils.

Erosion control measures (organisational, economic, agrotechnical, forestry and hydrotechnical) are being implemented over a total of more than 600000 hectares. More than 125000 hectares of sandy soils and 5000 hectares of ravines, riverbanks and reservoirs have been planted with forests, and protective tree belts have been planted in 3500 hectares of cultivated land.

Large areas are affected by mining activities, including peat production and the extraction of nonmetallic mineral resources (clay, sand and sand-gravel mixtures, carbonated raw materials, building stone etc.). About 300 deposits of non-metallic mineral resources are now strip-mined in Belarus. Besides, hundrends of small deposits of building materials are used for local needs.

Strip mining practically destroys the initial soil cover, and rehabilitation measures are required if they are to recover their natural and economic potential.

The use of potentially polluting substances such as lime, mineral fertilisers, pesticides and manure is the most significant source of soil contamination of agricultural origin.

Ex. l. Answer the following questions.

1. What is the reason of the destruction and contamination of soils?
2. How many hectares do eroded lands cover in Belarus?
3. What kinds of erosion are listed in the text?
4. Why is soil fertility decreasing?
5. What erosion control measures are being implemented in our Republic?

Ex. 2. Mark the following statements as true (T) or false (F).

1. Soils in Belarus are particularly subject to erosion.
2. There is no wind erosion in our Republic.
3. Crop yield losses can be as high as 50-70% on heavily leached soils.
4. Protective tree belts are not planted.
5. About 300 deposits of non-metallic mineral resources are now strip-mined in Belarus.

Ex. 3. Find in the text English equivalents to the following Russian words.

Строительство; разрушение; землепользование; эрозия; пахотные земли; водная эрозия; сельскохозяйственные культуры; меры борьбы с эрозией; засажены лесами; производство торфа.

Ех. 4. Give antonyms to the following words.

Construction; particular; lightly; metallic; insignificant; deterioration; northern.

Ex. 5. Fill in the gaps with the words from the text.

1. Land uses frequently have negative ... resulting in the destruction of the soil layer.
2. In some regions 40% of all lands are .... .
3. In the central and northern parts of the country, planar and linear is widespread.
4. The productivity of agricultural crops ... ... as a result of water erosion.
5. More than 125000 hectares of ravines, ... and ... have been planted with forests.

Ex. 6. Read text B and prepare a short oral talk for the lesson on climate change affects agriculture.

Text B

CLIMATE CHANGE AFFECTS AGRICULTURE

Crops need suitable soil, water, sunlight, and heat to grow. Warmer air temperatures have already affected the length of the growing season over large parts of Europe. Flowering and harvest dates for cereal crops are now happening several days earlier in the season. These changes are expected to continue in many regions.

In general, in northern Europe agricultural productivity might increase due to a longer growing season and an extension of the frost-free period. Warmer temperatures and longer growing seasons might also allow new crops to be cultivated. In southern Europe, however, extreme heat events and reductions in precipitation and water availability are expected to hamper crop productivity. Crop yields are also expected to vary increasingly from year to year due to extreme weather events and other factors such as pests and diseases.

In parts of the Mediterranean area, due to extreme heat and water stress in summer months, some summer crops might be cultivated in winter instead. Other areas, such as western France and south-eastern Europe, are expected to face yield reductions due to hot and dry summers without the possibility of shifting crop production into winter.

Changes in temperatures and growing seasons might also affect the proliferation and the spreading of some species, such as insects, invasive weeds, or diseases, all of which might in turn affect crop yields. A part of the potential yield losses can be offset by farming practices, such as rotating crops to match water availability, adjusting sowing dates to temperature and rainfall patterns, and using crop varieties better suited to new conditions (e.g. heat- and drought-resilient crops).

Land-based food sources are not the only food sources affected by climate change. The distribution of some fish stocks has already changed in the Northeast Atlantic, affecting the communities relying on these stocks throughout the supply chain. Along with increased maritime shipping, warmer water temperatures can also help facilitate the establishment of invasive marine species, causing local fish stocks to collapse.

LESSON 8

**Vocabulary**

phytocenoses – фитоценоз

to deposit – класть, запасать

isotope – изотоп

fire-break – противопожарная полоса, просека (в лесу)

trunk road – магистральная дорога

to seal – опечатывать

mine-shaft – рудник, шахта, шахтный ствол

Text A

CHERNOBYL NUCLEAR POWER PLANT ACCIDENT

The accident at Chernobyl NPP (April 1986) was unprecedented in its scale and is recognised as the most catastrophic technological accident the world has ever known. Radioactive substances released after the explosion of block 4 of the Chernobyl NPP were recorded m every country in the northern hemisphere.

Among all territories in the CIS countries contaminated by radionuclides after the accident, 70 % are within Belarus (46450km2 or 23 % of its territory). All administrative regions were exposed to contamination but the worst affected were the Gomel and Mogilev regions. Forest phytocenoses appear to be the most contaminated, as they acted as natural filters of wind-borne radioactive aerosols. Coniferous forests were especially contaminated, with 5 to 10 times more radionuclides deposited than in fields. Up to 90 % of the isotopes deposited are now in the upper soil layer.

High levels of contamination by caesium – 137 are particular also to the 4500 km2 zone from which all inhabitants were resettled.

The major focus of activities in these zones is to provide protection against fire. Protective mineralised fire-breaks are built each year around settlements, trunk roads, peat-bogs and forests.

In 1992 – 1994, warning signs were put up to classify lands as radioactively dangerous and to ban them from agricultural use.

Artesian wells have been sealed to prevent groundwater contamination, and numerous mine-shafts are now also being sealed. The only types of activity permitted in the closed zone are for radiation safety purposes: preventing the transfer of radioactive substances, implementing environmental protection measures, and research and experimental activities. The Polessky State Radioecological Reserve, covering 2,160 km2, was established by government decree for these purposes.

Ex. l. Answer the following questions.

1. Why do we say that the accident at Chernobyl NPP (April 1986) was unprecedented in its scale?
2. What administrative regions were exposed to contamination?
3. Why were coniferous forests especially contaminated?
4. From what zone were all inhabitants resettled?
5. What are the only types of activity permitted in the closed zone?

Ex. 2. **Translate from Russian into English.**

Авария, радиоактивные вещества, наиболее зараженные, за­щита от огня, деятельность, предотвращать, запрещать, для этих целей.

Ex. 3. Mark the following statements as true (T) or false (F).

1. All administrative regions were exposed to contamination but the worst affected were the Gomel and Brest regions.
2. Coniferous forests were especially contaminated.
3. The major focus of activities in these zones is to provide protection against fire.
4. Artesian wells have been sealed to prevent groundwater contamination.
5. The Polessky State Radioecological Reserve, was established by government decree for these purposes.

Ех. 4. Match the words on the left with their definitions on the right.

1. Accident a) being safe, freedom from danger

2. Explosion b) to build

3. Hemisphere c) contaminating or being contaminated

4. Upper d) likely to cause danger

5. Dangerous e) (contrasted with lower) higher in

place, situated above

6. Contamination f) half a sphere, half the earth

7. To put up g) (loud noise caused by a ) sudden and

violent bursting

8. Safety h) something unfortunate and

Undesirable

Ех. 5. Complete the sentences.

1. The accident at Chernobyl NPP (April 1986) was unprecedented in its scale ………..
2. Among all territories in the CIS countries contaminated by radionuclides after the accident ……
3. Forest phytocenoses appear to be the most contaminated ……
4. Protective mineralised fire-breaks ……..
5. Up to 90 % of the isotopes deposited ……

Ex.6. Read text B and prepare a short oral talk for the lesson on nuclear power comes from nuclear fission.

Text B

NUCLEAR POWER COMES FROM NUCLEAR FISSION

Many power plants, including nuclear power plants, heat water to produce electricity. These power plants use steam from heated water to spin large turbines that generate electricity. Nuclear power plants use heat produced during nuclear fission to heat water.

In nuclear fission, atoms are split apart to form smaller atoms, releasing energy. Fission takes place inside the reactor of a nuclear power plant. At the center of the reactor is the core, which contains uranium fuel.

The heat produced during nuclear fission in the reactor core is used to boil water into steam, which turns the turbine blades. As the turbine blades turn, they drive generators that make electricity. Afterward, the steam is cooled back into water in a separate structure at the power plant called a cooling tower. The water can then be reused.

Nuclear power plants generate about 20 % of U.S. electricity

The United States has 99 nuclear reactors at 61 operating nuclear power plants located in 30 states. Thirty-five of the plants have 2 or more reactors. Nuclear power has supplied about one-fifth of annual U.S. electricity since 1990.

The United States generates more nuclear power than any other country

Of the 31 countries in the world that have commercial nuclear power plants, the United States has the most nuclear capacity and generation. France has the second-highest nuclear electricity generation and obtains about 75% of its total electricity from nuclear energy. Fifteen other countries generate more than 20 % of their electricity from nuclear power.

**Vocabulary**

**A**

abundant – изобильный, достаточный

accumulate – накапливать

acidiеty – кислотность

altitude – высота, возвышенность, высота над уровнем моря

B

bayou – 1) рукав в дельте реки 2) ручей, протекающий через заболоченную местность

biodiversity – биоразнообразие

biomass – биомасса

biotechnology – биотехнология

bog – болото

**C**

carbonated – насыщенный углекислотой

carnivore – плотоядное животное

carrying capacity – грузоподъемность

chlorofluorocarbon – жидкий хлористый углерод

compound – смесь

coniferous – хвойный

consumption – потребление

cultivate – культивировать

D

deciduous – лиственный

decomposer – редуцент

deforestation – вырубка леса

depletion – истощение, исчерпывание, опустошение

deposits – залежи, месторождения

detritus – детрит

diversity – различие, разнообразие

domesticate – приручать

drainage – дренаж

**E**

energy – энергия

enhanced greenhouse effect – усиленный парниковый эфект

environment – окружающая среда

extinction – вымирание

extraction – добыча

**F**

fertilizer – удобрение

fire-break – противопожарная полоса, просека (в лесу)

flat – плоскость, низина

fluctuate – колебаться

food chain – пищевая цепочка

food web – пищевая сеть

fossil fuel – ископаемое топливо

**G**

gene – ген

genetics – генетика

glacial – ледниковый, ледникового происхождения

glaciated – геол. подвергшийся действию ледников

global warming – глобальное потепление

gravel – гравий

graze – пасти

green house gas – парниковый газ

H

habitat – родина ( животного, растения), естественная среда

herbivore – травоядное

hilly – холмистый

hummock – холмик

hydroengineering – гидротехника

**I**

implementation – исполнение

interact with – взаимодействовать (с)

involved in – вовлеченный в

ionizing – ионизирующий

irreversible – необратимый

isotope – изотоп

L

landscape – ландшафт

linear – линейный

loamy – глинистый

lowland – низменность, низина, долина

**M**

mammal – млекопитающее

meeting point – зд. место пересечения

migrate – переселяться, мигрировать

mineral resources – недра, минеральные богатства

mine-shaft – рудник, шахта, шахтный ствол

mining – горная промышленность, ведение горных работ

moraine – геол. морена

**N**

nitrogen – азот

nutrient – питательное вещество

**O**

omnivore – всеядное существо

oxidant – окислитель

ozone – озон

**P**

peat – торф

phosphorus – фосфор

phytocenoses – фитоценоз

pipeline – трубопровод

plain – равнина

planar – плоский, плоскостной

plateau – плато, плоскогорье, плоская возвышенность

pollution – загрязнение

predator – хищник

prey – добыча, охотиться

prospecting – исследование, изыскание

provision – обеспечение, принятие мер, *юр.* положение, предусматривающее что-либо, условие (договора и т. п.)

R

range – ряд, цепь (гор)

ravine – глубокое ущелье

rehabilitation – восстановление

relief – рельеф

resilient – упругий

robust – крепкий, здоровый, бодрый

**S**

selection – выбор

soil layer – почвенный слой

solar radiation – солнечное излучение

species – виды

spruce – (канадская) ель

stratospheric – стратосферный

strip-mined – в открытой добыче

subject to – подверженный

swampy – болотистый

T

tissue – ткань

to delay – задерживать

to deposit – класть, запасать

to inhibit – препятствовать, задерживать

to leach – выщелачивать

to seal – опечатывать

transgenic – трансгенный

trophic level – трофический уровень

tropospheric – тропосферный

trunk road – магистральная дорога

turf – дерн, торф

**U**

ultra-violet, UV – ультрафиолетовый

undulating – волнистый

upland – нагорный, лежащий внутри страны, вдали от моря

**V**

viable – жизнеспособный

**W**

wild ancestor – дикий предок

with regard to – относительно, что касается

СОДЕРЖАНИЕ

|  |  |
| --- | --- |
| Введение……………………………………………………………………… …………. | 3 |
| LESSON 1………………………………………………………………………………… | 4 |
| LESSON 2………………………………………………………………………………… | 9 |
| LESSON 3………………………………………………………………………………… | 13 |
| LESSON 4………………………………………………………………………………… | 17 |
| LESSON 5………………………………………………………………………………… | 22 |
| LESSON 6………………………………………………………………………………… | 25 |
| LESSON 7……………………………………………………………………………….. | 29 |
| LESSON 8………………………………………………………………………………… | 33 |
|  |  |

Учебное издание

**Новицкая** Вероника Леонидовна

АНГЛИЙСКИЙ ЯЗЫК

Environmental protection

Сборник текстов и упражнений

Подписано в печать 2017. Формат 60×84 1/16. Бумага офсетная.

Ризография. Гарнитура «Таймс». Усл. печ. л. 2,32. Уч.-изд. л. 1,61.

Тираж экз. Заказ .

Отпечатано в УО «Белорусская государственная сельскохозяйственная академия».

Ул. Мичурина, 5, 213407, г. Горки.