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Цель данного пособия – выработать у студентов навыки чтения и перевода текстов экологической тематики. Данное учебное пособие предусматривает представление материала по тематическому принципу на базе современных научно-популярных текстов.

Данное пособие может быть использовано в качестве основного или дополнительного при обучении студентов по специальностям «Инженерная защита окружающей среды (в энергетика, энергоснабжении)» и «Водные ресурсы и аквакультура».

Рецензенты:
Канд. филол. наук, доцент кафедры иностранных языков КГЭУ
Муллахметова Г.Р.
Канд. филол. наук, доцент кафедры контрастивной лингвистики и переводоведения, заместитель декана по заочному обучению ТГГПУ
Депутатова Н.А.

ПРЕДИСЛОВИЕ

Данное учебное пособие ставит целью выработку у студентов навыков чтения и перевода текстов по специальности «Инженер по защите окружающей среды». Современные тексты научно-популярного характера, подвергнутые незначительной адаптации, взяты из тематических изданий современных авторов.

Пособие состоит из шести разделов, отражающих современные проблемы экологии в энергетике.

Каждый раздел включает четыре текста, словари к текстам, задания после текстов, позволяющие определить уровень понимания, не прибегая к переводу. Специальные упражнения на перевод терминов обеспечивают адекватность их последующего употребления в речи.

В конце пособия помещен краткий справочный материал по грамматике. Грамматические упражнения также составлены с учетом экологической тематики.

Приложение в конце пособия предоставляет возможность самостоятельного изучения дополнительных текстов по каждому разделу.

Данное пособие может быть использовано в качестве основного или дополнительного при обучении студентов по специальности «Инженерная защита окружающей среды (в энергетика, энергоснабжении)» и «Водные ресурсы и аквакультура».

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Unit 1 Energy today

Text A Energy today

Prosperity for everyone on Earth by 2050 will require a sustainable source of electricity equivalent to 3 to 5 times the commercial power currently produced. Because of the low average incomes in developing countries, however, this energy must be provided at one-tenth the present total cost per kilowatt-hour. Solar-power stations constructed on the moon from common lunar materials could provide the clean, safe, low-cost commercial electric energy needed on Earth.

Currently, commercial energy production on Earth raises concerns about pollution, safety, reliability of supply, and cost. These concerns grow as the world's nations begin to expand existing systems to power a more prosperous world. Such growth could exhaust coal, oil, and natural gas reserves in less than a century, while the production and burning of these fossil fuels pollute the biosphere. Expanding nuclear fission power would require breeder reactors, but there is intense political resistance to that idea because of concerns about proliferation, nuclear contamination of the environment, and cost. Thousands of large commercial fusion reactors are highly unlikely to be built by 2050. Terrestrial renewable systems (hydroelectric, geothermal, ocean thermal, waves, and tides) cannot dependably provide adequate power. Using wind power would require capturing one-third of the power of the low-level winds over all the continents.

Although energy coming directly to Earth from the sun is renewable, weather makes the supply variable. Very advanced technologies, such as 30 % efficient solar cells coupled with superconducting power transmission and storage, imply solar arrays that would occupy selected regions totaling 20 % of the area of the United States. Studies funded by the World Energy Council project that terrestrial solar energy will provide less than 15 % of the electric power needed for global prosperity by 2050.

EXECISE 1

Выпишите незнакомые слова и составьте словарь, аналогичный предлагаемому в предыдущих уроках.

EXECISE 2

Переведите текст и составьте по одному вопросу к каждому абзацу.

EXECISE 3

Дайте названия абзацам.

EXECISE 4

Выделите главную идею каждого абзаца и прочтите предложение, которое является главным для каждого абзаца.

EXECISE 5

Перескажите текст.

Text B Oil

In Canada, oil has been extracted from tar sands since 1978 and here the costs have dropped from $28 per barrel to just $11. For comparison the price of a barrel of oil was $27 in 2000.

The US Energy Information Agency estimates that today it will be possible to produce about 550 billion barrels of oil from tar sands and shale oil at a price below $30, i.e. that it is possible to increase the present global oil reserves by 50 percent. And it is estimated that within 25 years we can commercially exploit twice as much in oil reserves as the world's present oil reserves. Should the oil price increase to $40 per barrel we will probably be able to exploit about five times the present reserves.

The total size of shale oil resources is quite numbing. It is estimated that globally there is about 242 times more shale oil than the conventional petroleum resources. There is more than eight times more energy in shale oil than in all other energy resources combined – oil, gas, coal, peat and tar sands. This stunning amount of energy is the equivalent of our present total energy consumption for more than 5,000 years.

Consequently, there is no need for any immediate worry about running out of fossil fuels. A proportion of the fossil fuels, however, are probably only accessible at a higher price. Still, there is good reason to believe that the total energy share of our budget – even if we continue to depend solely on fossil fuels – will be dropping.

Today the global price for energy constitutes less than 2 percent of the gross domestic product (GDP), and yet if we assume only a moderate continued growth in GDP this share will in all likelihood continue to drop. Even assuming truly dramatic price increases on energy of 100 percent, by the year 2030 the share of income spent on energy will have dropped slightly.

EXECISE 1

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EXECISE 5

Перескажите текст.

Text C Nuclear energy

Nuclear energy constitutes six percent of global energy production and 20 percent in the countries that have nuclear power. Despite growth in Asia, the prospects for this sector spell stagnation until 2010 and a minor recession after that. This recession is mainly caused by perceived problems of security as stressed by the accidents at Three Mile Island and Chernobyl which undermined many people's confidence in this energy source.

Ordinary nuclear power exploits the energy of fission by cleaving the molecules of uranium-235 and reaping the heat energy. The energy of one gram of

uranium-235 is equivalent to almost three tons of coal. Nuclear power is also a very clean energy source which, during normal operation, almost does not pollute. It produces no carbon dioxide and radioactive emissions are actually lower than the radioactivity caused by coal-fueled power plants.

At the same time nuclear power also produces waste materials that remain radioactive for many years to come (some beyond 100,000 years). This has given rise to great political debates on waste deposit placement and the reasonable of leaving future generations such an inheritance. Additionally, waste from civilian nuclear reactors can be used to produce plutonium for nuclear weapons. Consequently, the use of nuclear power in many countries also poses a potential security problem.

For the moment there is enough uranium-235 for about 100 years. However, a special type of reactor – the so-called fast-breeder reactor – can use the much more common uranium-238 which constitutes over 99 percent of all uranium. The idea is that while uranium-238 cannot be used directly in energy production it can be placed in the same reactor core with uranium-235. The uranium-235 produces energy as in ordinary reactors, while the radiation transforms uranium-238 to plutonium-239 which can then be used as new fuel for the reactor. It sounds a bit like magic, but fast-breeder reactors can actually produce more fuel than they consume. Thus it is estimated that with these reactors there will be sufficient uranium for up to 14,000 years. Unfortunately these reactors are more technologically vulnerable and they produce large amounts of plutonium that can be used for nuclear weapons production, thus adding to the security concerns.

Nuclear power, however, has barely been efficient in the production of energy and this is probably the major reason why its use has not been more widespread. It is difficult to find unequivocal estimates of the total costs since there are so many different variables that can affect the calculations, but typically the price hovers around 11-13 cents for one kilowatt-hour (kWh) in 1999 prices. This should be compared with an average energy price for fossil fuels of 6.23 cents.

In the longer run, the primary focus is no longer on fission energy but rather on fusion energy. This technology aims at fusing two hydrogen atoms into a single atom of helium. A single gram of fuel can develop the same energy as 45 barrels of oil. Fuel comes basically from ordinary sea water and thus supply is virtually infinite. Moreover, there will be very little radioactive waste or emissions. However, fusion demands astronomical temperatures and despite investments above $20 billion we have still only managed to achieve 10 percent of the laser power necessary for producing energy. Consequently it is supposed that fusion energy will be

commercially available only after 2030 or perhaps only well into the twenty-second century.

EXECISE 1

Выпишите незнакомые слова и составьте словарь, аналогичный предлагаемому в предыдущих уроках.

EXECISE 2

Переведите текст и составьте по одному вопросу к каждому абзацу.

EXECISE 3

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EXECISE 4

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EXECISE 5

Перескажите текст.

Unit 2 SAFE ENERGY
Text A Energy problems

EXECISE 1: Is it cheaper to use solar energy or wind energy?

Renewable energy sources, unlike fossil fuel, can be used without ever being used up. These are typically sources such as sun, wind, water and Earth's internal heat.

It is important to focus on the fact that the difference in cost between traditional fossil fuels and some of the cheapest: renewable energy sources is so relatively slight. Moreover, these economic costs do not include the negative social cost of fossil fuel use on the environment. Energy from a coalfired power plant may still be 20-50 percent cheaper than the energy produced by a windmill, but if the effects on environment and humans from coal pollution and waste products exceed the price difference then society ought to choose wind energy.

Recently, one European and two American large-scale projects have attempted to examine all costs associated with electricity production, all the way from the mortal risks of mining coal, the traffic hazards of transportation and occupational hazards of production including consequences of acid rain, particles, sulfur dioxide, nitrogen oxides and ozone on lakes, crops, buildings, children and old people and up to the consequences of tax codes and occupation plus a long, long list of similar considerations and costs. Altogether these studies find that the extra social cost of new coalfired power plants is around 0.16-0.59 cents per kWh. None of the three studies, however, quantifies the costs of carbon dioxide which probably means an additional 0.64 cents per kWh. Consequently renewable energy actually has to drop somewhat in price before it will be competitive, even including social costs. Nevertheless, it is estimated that the price of renewable energy will fall faster than the price for conventional energy. It should however also be added that there is still quite a bit of uncertainty about the predictions of such prices, because early predictions in hindsight have seemed rather optimistic. In 1991 the Union of Concerned Scientists predicted that solar power today would drop below 10 cents per kWh, but unfortunately it has still only dropped to about 50 cents per kWh.

Thus, it is unclear whether it is necessary to support renewable energy with subsidies and tax exemptions. In Denmark this subsidy is as much as 5 cents per kWh for wind energy, and in the US, subsidy for wind power is estimated at about 1.5 cents per kWh. It would still be much more effective to tax energy such that its actual price would adequately reflect the social costs in production and emissions.

VOCABULARY:

Cost	Стоимость	Conventional	Традиционный
Ought	Должен (модальный глагол)	Should	Следует (модальный глагол)
Renewable	Возобновляемый	Hindsight	Взгляд в прошлое, оценка прошлых событий
Waste	Отходы	Subsidy	Субсидии
Fossil fuel	Ископаемое топливо	Exemption	Освобождение от налогов
Mortal	Смертельный	To tax	Облагать налогом
Mining	Добыча	Emission	Выпуск
Hazard	Несчастный случай	Similar	Подобный
Tax code	Налоговый кодекс	To quantify	Подсчитывать
Competitive	Конкурентный	Adequately	Адекватно

EXECISE 2

Найдите правильные переводы выражений на английском языке, приведенных в правой колонке:

1. To focus on the fact	1. Отходы
2. Negative social cost	2. Смертельный риск
3. Fossil fuel use	3. Несчастные случаи на производстве
4. Waste product	4. Весь путь начиная от
5. The mortal risks	5. Обратить внимание на тот факт
6. Occupational hazards of production	6. Стоимость негативного социального воздействия
7. All the way from	7. Использование ископаемого топлива
8. Tax codes	8. Налоговый кодекс
9. Similar considerations	9. Подобные соображения
10. To drop somewhat in price	10. Тем не менее по оценкам

11. It should however also be added	11. До
12. There is still quite a bit of uncertainty	12. Расходы на производство и выпуск продукции
13. Nevertheless, it is estimated	13. Было бы намного эффективнее
14. It is unclear whether it is necessary	14. Есть еще небольшая доля сомнения
15. It would still be much more effective	15. Снизить стоимость чего-либо
16. Costs in production and emissions	16. Неясно необходимо ли
17. Up to	17. Следовало бы однако также добавить

EXECISE 3

Согласны ли вы с кратким выводом по содержанию предыдущего текста: The most important point in this text on energy is to stress not only that there are ample reserves of fossil fuels but also that potentially unlimited renewable energy resources definitely are within economic reach.

EXECISE 4

Ответьте на вопросы: 1. Which kind of energy is cheaper? 2. Why can’t we agree that coalfired energy is cheaper? 3. How many projects have been realized to examine all costs associated with electricity production? 4. How much do these studies evaluate the extra social cost of a new coalfired plant? 5. What is it necessary to do in order to make renewable energy competitive? 6. Does the renewable energy fall in price fast? 7. How is it possible to support the development of renewable energy?

Text B Solar energy

The largest part of the energy on Earth comes from the sun. Only a small part comes from radioactive processes within the Earth itself. The sun gives off so much energy that it is equivalent to a 180-watt bulb perpetually lighting up every single square meter on Earth. Of course energy is not distributed equally - the tropics receive more than 250 watts whereas the polar regions get only about 100 watts.

The solar energy influx is equivalent to about 7,000 times our present global energy consumption. The yearly solar energy by far exceeds any other energy resource. Or put in a different way: even with our relatively ineffective solar cells, a square area in the tropics 469 km (291 miles) on each side - 0.15 percent of Earth's land mass - could supply all our current energy requirements. In principle this area could be placed in the Sahara Desert (of which it would take up 2.6 percent) or at sea. In reality, of course, one would not build a single, central power plant, but the example underscores partly how little space really is necessary to cover our energy needs, partly that the area can be placed somewhere of little or no biological or commercial value.

The remote Indonesian village of Sukatani was changed literally overnight when solar cells were installed in 1989. The equatorial nights, which last 12 hours all year round, previously left little to do. But today, children can do their homework after supper, the village sports a new motorized well pump providing a steady supply of water for better sanitation, and now some of the local waning (shops) are open after sunset and television sets provide entertainment and a window on the wider world.

Solar energy can also be exploited directly through heating and indirectly by growing plants, later to be burnt (biomass). In Denmark it is estimated that direct solar energy can provide about 10-12 percent of our energy. In the US also, biomass is predicted to have substantial growth. The US Energy Information Agency estimates that solar energy could cover the entire American energy requirements more than 3.5 times over. But for this to become reality a lot of ingenuity is required.

Japan has started integrating solar cells in building materials, letting them become part of roofs and walls. Others have produced watertight thin-film ceramic solar cells to replace typical roofing materials. In Wales an experimental center open to visitors has chosen solar cells not only to supply the building with electricity, but also because it can save costs for traditional roofing.

VOCABULARY:

Radioactive	Радиоактивный	pump	Насос
Bulb	Лампочка	Steady	Постепенно
Perpetually	Бесконечно	Supply	Снабжение
Influx	Приток	Sanitation	Санитария
Cell	Элемент	To exploit	Эксплуатировать
To exceed	Превышать	Biomass	Биомасса
By far	Безусловно	Ingenuity	Изобретательность
To illustrate	Иллюстрировать	Watertight	Водонепроницаемый
Requirement	Потребности	Thin-film	Тонкопленочная
To underscore	Подчеркивать	Ceramic	Керамика
Indonesian	Индонезийский	Literally	Буквально
To sport	Использовать		

EXECISE 1

Ответьте на вопросы: 1. Where does the largest part of the energy come from? 2.How much energy does the sun give off? 3. How is the sun energy distributed on the Earth? 4. Does the solar energy influx cover our present global energy consumption? 5. How much area in the tropics is required to cover all our current energy consumption? 6. How did the Indonesian village change when solar cells were installed in 1982? 7. How solar energy can be exploited? 8. How are solar cells used in Japan? 9. What is done in Wales for using solar cells?

EXECISE 2

Соедините переводы с соответствующими словосочетаниями на английском языке:

1. To leave little to do	1. Распространять равномерно
2. The example underscores partly	2. Поток солнечной энергии

3. Watertight thin-film ceramic cells	3. Пример частично подчеркивает
4. For this to become reality	4. Не представляющий коммерческого интереса
5. To change literally overnight	5. Масштаб взаимоотношений
6. To illustrate clearly	6. Ясно показывать
7. The solar energy influx	7. Тотально измениться за одну ночь
8. To be of no commercial value	8. Оставлять мало времени для жизнедеятельности
9. To let to become the part	9. Позволить стать частью
10. To distribute equally	10. Чтобы это стало реальностью
11. Or put in different way	11. Водонепроницаемые тонкопленочные керамические фотоэлементы
12. A steady water supply for better sanitation	12. Постоянное водоснабжение для создания лучших санитарных условий
13. The scale of these relationships	13. Или пойти другим путем

Text C Wind energy

Wind energy has been exploited through millennia. Long before the Current Era, ancient Civilizations in China, India and Persia used wind to pump up water and to mill grain. Already in early medieval times windmills were a known technology throughout Europe, and the windmill remained the primary energy source till the arrival of the steam engine. In countries such as Denmark that did not have their own coal supply, the windmill continued to have a central position. In 19l6 alone Denmark built more than 1,300 new windmills.

Being the world leader in wind power, windmills in Denmark still produced only about 9 percent of all Danish electricity in 1998. In the US, windmills produced just 0.1 percent of the total electricity production in 1998.

But problems will arise if a significant part of a nation’s electricity requirements are to be met by wind power. Close to inhabited areas windmill noise can be a nuisance. Moreover, to be effective, windmills need to be placed in open environments, and here they easily mar the scenery. The only long-term solution is

placing windmills far out to sea. Not only will there be few if any esthetic problems but windmills are typically 50 percent more effective here.

Critics of windmills often point out that they are still not profitable, that they require much energy to produce, and that they kill birds. As we saw above, windmills are still not fully competitive, although they are probably no more than 30-50 percent more expensive, and even less when including the social and environmental costs of continued use of fossil fuels. In the longer run, they will undoubtedly be competitive or even cheaper.

It is also objected that windmills themselves demand quite a bit of energy to be produced: the steel has to be mined, smelted and rolled, and the windmill itself has to be transported and in the end disposed of. However, going over the extended energy account, it turns out that a modern windmill can produce the energy used for its own production within just three months.

It is true that windmills kill birds, although the problem will be much smaller at sea. In Denmark it is estimated that about 30,000 birds die in collisions with windmills each year. In the US the number is about 70,000.

VOCABULARY:

To mill	Молоть	Undoubtedly	Несомненно
Grain	Зерно	Steel	Сталь
Steam engine	Паровой двигатель	To mine	Добывать
Inhabited	Населенный	To smelt	Расплавлять
Noise	Шум	To roll	Прокатывать
Nuisance	Помеха	To go over	Внимательно изучать
To mar	Портить	Account	Счет
Scenery	Пейзаж	Collision	Столкновения
Esthetic	Эстетический	Extended	Расширенный

EXECISE 1

Соедините переводы с соответствующими выражениями на английском языке:

1. Задолго до нашей эры	1. A technology known throughout Europe
2. В начале средневековья	2. In the end of disposal
3. Известная во всей Европе технология	3. It is also objected
4. Продолжает занимать центральное положение	4. Not to be still fully competitive
5. Будучи мировым лидером в чем-то	5. Long before the current era
6. Значительная часть национальных потребностей в электричестве	6. In early medieval times
7. Долгосрочное решение	7. To continue to have a central position
8. В долгосрочной перспективе	8. Being the world leader
9. Еще не быть до конца конкуренто-способным	9. In the long run
10. Также выдвигаются возражения	10. The only long-term solution
11. Конечный пункт назначения	11. A significant part of a nation's electricity requirements
12. Иметь собственные запасы угля	12. Quite a bit of energy to be produced
13. Удовлетворить требования	13. To have own coal supply
14. Не только из-за каких-то эстетических соображений	14. Not only will there be few if any esthetic problems
15. Дальнейшее использование угля	15. Continued use of coal
16. Производиться достаточно мало энергии	16. The requirements are to be met by
17. Взглянув на расширенный расчет стоимости энергии	17. Going over the extended energy account

EXECISE 2

Ответьте на вопросы: 1. How long has the wind energy been exploited? 2.How was the wind used by ancient civilizations? 3. When did first windmills appear? 4. Where did the windmill continue to have a central position? 5. How much energy do windmills produce in Denmark? 6. How many windmills were built in

Denmark in1916? 7. What problems do the modern windmills have today? 8. What do critics of windmills often point out?

Unit 3 GLOBAL WARMINIG

Text A Global warming

Climate change and especially global warming has become the overriding environmental concern since the 1990s. Most discussions about the environment end up pointing out that, despite all other indicators that may show us doing better and better, we still have to change our current lifestyle dramatically because our way of life is now changing the climate and causing global warming.

The consequence is that we must change our industrial ways. Worldwatch Institute tells us that "the only feasible alternative is a solar/hydrogen-based economy." Greenpeace equivalently tells us that although we may have lost of oil, global warming prevents us from using it – "we are in a second world oil crisis. But in the 1970s the problem was a shortage of oil. This time round the problem is that we have too much." The only solution is choosing "a fundamentally new energy direction based on clean renewable energy, like wind or solar power."

In this way, climate change has become the environmental trump card - possibly we are not running out of raw materials, possibly we are actually doing better and better on almost any objective indicator, but if global warming demands a change, all other arguments will be of lesser import. Worldwatch Institute actually envisions how in the twenty-first century "the climate battle may assume the kind of strategic importance that wars - both hot and cold - have had during" the twentieth century. Backed up by a number of leading scientists writing in *Nature*, Worldwach Institute asserts that to develop the necessary technologies to combat climate change will require a monumental research effort, conducted with the urgency of the Manhattan Project or the Apollo space program.

These drastic efforts are justified by a general understanding of the severe consequences of global warming. In many people's view, climate change is linked to drastic increases in temperature and catastrophic climatic shifts. We fear that global warming could result in the destruction of our ecosystems, widespread famine, more and more powerful hurricanes, the melting of the ice caps and the oceans flooding the Maldives, Bangladesh and other low-lying areas on Earth.

This is no wonder, given the constant media barrage of possible greenhouse related catastrophes. Almost any weather event is now linked to climate change. In Leonardo DiCaprio's March 2000 interview of the President, Clinton told that if we do not change our ways, what will happen is,

" the polar ice caps will melt more rapidly; sea levels will rise; you will have the danger of flooding the sugarcane fields of Louisiana ; island nations could literally be buried. The whole climate of the United States, for example, could be changed where you would have more flooding, more heat waves, more storms, more extreme weather events generally".

VOCABULARY:

Overriding	Важнейший	To assert	Утверждать
Concern	Забота	To conduct	Проводить
Feasible	Реальный	Urgency	Безотлагательность
Equivalently	То же самое	Drastic	Решительный
Shortage	Недостаток, дефицит	Widespread	Широко распространенный
Trump card	Козырная карта	Shift	Изменения
Objective	Цель	Famine	Голод
Indicator	Индикатор	Hurricane	Ураган
To envision	Предвидеть	To assume	Принимать форму
Barrage	Заграждение, плотина	Sugarcane	Сахарный тростник
Literally	Без преувеличения	To bury	Хоронить

EXECISE 1

Ответьте на вопросы: 1. When has the climate change become the environmental concern? 2. What do we have to change in order to avoid global warming? 3. What must future energy direction be based on? 4. Is the problem of global warming explained by shortage of oil? 5. Does the climate battle assume the kind of war? 6.What is important to develop the necessary technologies to combat climate? 7.What

is climate change linked to from the point of many people's view? 8. What are the real consequences of global warming?

EXECISE 2

Найдите эквиваленты: важнейшая проблема экологии, приводить к указанию, жить все лучше и лучше, стиль жизни, пути развития производства, основанная на гидроисточниках энергии экономика, иметь расход энергии, находиться в условиях второго мирового кризиса потребления нефти, дефицит нефти, основное направление энергетики, израсходовать, практически по любому объективному показателю, иметь меньшее значение, обрести стратегическое значение, всеобъемлющие усилия по исследованию, жестокие последствия, с точки зрения многих людей.

EXECISE 3

Расставьте в правильном порядке названия абзацев:

- Our fears about global warming
- A new energy direction
- Our lifestyle threatens the climate
- Third world war

EXECISE 4

Выделите в каждом абзаце предложение, наиболее полно отражающее основное содержание абзаца.

EXECISE 5

Составьте фразы, соответствующие содержанию текста:

1. Climate change and especially global warming has become the overriding environmental concern since	the 1990s.
	the 1980s.
	the 1960s.

2. The only solution of avoiding climate change is choosing	a fundamentally new energy direction.
	a new life style.
	a new methods of oil combustion.

3. To develop the necessary technologies to combat climate change will require	a monumental research effort.
	a new way of life.
	a new technologies.

4. In many people's view, climate change is linked to	drastic increases in temperature.
	to new technologies.
	to new climate.

Text B The basic greenhouse effect

The main concern of climate change is global warming and the predicted warming is based on the socalled greenhouse effect. The fundamental principle of the greenhouse effect is really quite simple and entirely uncontroversial. Several types of gases can reflect or trap heat, including water vapor, carbon dioxide (CO_2), methane (CH_2), laughing gas (N_2O), chlorofluorocarbons (CFC) gases and ozone. Together they are known as greenhouse gases.

The greenhouse gases trap some of the heat emitted by the Earth, rather like having a blanket wrapped around the globe. The basic greenhouse effect is good - if the atmosphere did not contain greenhouse gases the average temperature on the Earth would be approximately 33° C (59 °F) colder and it is unlikely that life as we know it would be able to exist.

The problem is that man has increased the quantity of greenhouse gases, CO_2 in particular, in the atmosphere. About 80 percent of the extra CO_2 comes from the combustion of oil, coal and gas whereas the other 20 percent comes from deforestation and other land changes in the tropics. About 55 percent of the released CO_2 is absorbed again by the oceans, by northern forest regrowth, and generally by increased plant growth (plants use CO_2 as fertilizer), but the rest is added to the atmosphere, such that the concentration of CO_2 has increased by 31 percent from preindustrial times to the present day.

If the extra greenhouse gases, and among them CO_2 reflect heat, more greenhouse gases in the atmosphere will (everything else being equal) lead to an increase in the temperature on Earth. This is the so called anthropogenic greenhouse effect, the extra, man-made greenhouse effect. This effect is our main interest. We will in the following just call it the greenhouse effect.

VOCABULARY:

Uncontroversial	Неоспоримый	Laughing gas	Веселящий газ
To trap	Удерживать	To wrap	Заворачивать
Vapor	Пар	Antropogenic	Антропогенный
Methane	Метан		

EXECISE 1

Ответьте на вопросы: 1. What are the predictions about future warming based on? 2. What is the fundamental principle of green house effect? 3. Is the basic green effect really good? 4. Why has the greenhouse effect become to affect the climate negatively? 5. Where does extra carbon dioxide come from? 6. What part of the released carbon dioxide is added to the atmosphere? 7. Explain please what does the so called anthropogenic greenhouse effect mean?

EXECISE 2

Найдите эквиваленты: предсказываемое потепление, так называемый, быть известным как, основной принцип, средняя температура, известная нам форма жизни, способная к существованию, возобновление роста, представляющая для нас основной интерес, другие изменения состояния земель, дополнительные газы, в дальнейшем.

EXECISE 3

Составьте фразы, соответствующие содержанию текста:

	an increase	in the

1. More greenhouse gases in the atmosphere will lead to	a decrease	temperature on Earth.
	the stability	

2. About 80 percent of the extra CO_2 comes from	combustion of oil, coal and gas.
	deforestation.
	other land changes in the tropics.

3. The considerable part of the released CO_2 is absorbed again, and generally	by the oceans.
	by northern forest regrowth.
	by increased plant growth (plants use CO_2 as fertilizer).

4. Several types of gases, including water vapor, carbon dioxide (CO_2), methane (CH_2), laughing gas (N_2O), CFC gases and ozone are known	as greenhouse gases.
	as climate change gases.
	as easy gases.

5. The greenhouse gases	trap	some of the heat emitted by the Earth.
	reflect	
	absorb	

6. The main concern of climate change is	global warming.
	global cooling.
	global stability.

Text C The long-term development of the climate

In order to understand what will happen_with the global temperature, it is necessary first to look at what has happened. We have only used thermometers systematically and globally over the past century and a half (the world's longest record in Central England only goes back to 1659). If we want to know about the long-term development of the climate, we have to look for other ways of measuring temperature.

We can get a grip on the development of temperature by studying how it has affected other objects that we can measure today – the so called proxy indicators. For instance, temperature has in many ways affected the ice that has accumulated in polar regions. When we drill out an ice core, we can count the layers backwards in time and measure the fraction of melted ice, the concentration of salts and acids, the load of pollen or trace gases trapped in air bubbles. Equally, we can estimate temperature by looking at tree rings (because trees grow wider rings in warn weather), corals (measuring growth rings or trace elements), lake and ocean sediments, boreholes etc.

Throughout the past one million years there has occurred a series of eight glacial/interglacial cycles, driven by the changes in earth's orbit around the sun. The last interglacial period – the Holocene, which we still live in – began about 10,000 years ago. The melting ice caused the sea to rise some 120 m while the early temperatures were generally warmer than the twentieth century. The records seem to indicate substantial temperature swings throughout the Holocene on a millennial scale. Some indicators even show changes of 5 to 8 degrees C over 1,500 years. When looking over the long 400,000 years of ice cores, the Holocene appears the longest warm and stable period, which has naturally had profound implications for the development of civilization.

Basically, there is no disagreement that the centuries before 1900 were much colder. This phenomenon is well known in history as the "Little Ice Age," broadly stretching from 1400-1900. Evidence from a wide range of sources shows colder continents where glaciers advanced rapidly in Greenland, Iceland, Scandinavia, and the Alps. Many European springs and summers were outstandingly cold and wet. Crop practices changed throughout Europe to adapt to a shortened and less reliable growing season, causing recurrent famines. Likewise in China, warm weather crops, such as oranges, were abandoned in the Kiangsi Province, and in North America the early European settlers reported exceptionally severe winters.

Summing up, there is no doubt that the temperature of the late twentieth century is greater than many previous centuries. However, this cannot be taken as a simple indication of overwhelming global warming as we are also coming out of a Little Ice Age. The temperature is higher now than at any time throughout the past 1000 years. This claim seems less well substantiated, as the data essentially exclude ocean temperatures, night temperatures and winter temperatures and are based almost exclusively on North American data.

VOCABULARY:

Thermometer	Термометр	Borehole	Скважина
To get a grip	Ухватить	Interglacial	Межледниковый
Proxy indicator	Заслуживающий доверия	Recurrent	Периодически повторяющийся
To accumulate	Накапливать	Substantial	Сильный
To drill out	Бурить	Swing	Колебание
Core	Среднюю часть	Millennial	Тысячелетний
Backwards	Назад	Scale	Масштаб
Fraction	Крупица	Profound	Глубокое
Pollen	Пыльца	Implication	Последствие
Trace	След	Stretching	Растянувшийся
Bubble	Пузырек	Broadly	Широко
Sediment	Осадок	Holocene	Голоцен
Overwhelming	Огромный	To substantiate	Делать реальным
Driven	Управляемый	Evidence	Свидетельства

EXECISE 1

Ответьте на вопросы: 1. What is it necessary in order to understand what will happen to the global climate? 2. When did people use thermometers systematically and globally? 3. What are the other ways of measuring temperatures? 4. What objects did the temperatures development affect? 5. How many glacial/interglacial cycles have occurred throughout past one million years? 6. Which interglacial period do we still live in? 7. Which are the main characteristics of the Holocene? 8. Were the centuries before 1900 colder or warmer? 9. Why did the crop practices change throughout Europe? 10. What phenomenon is known in history as the Little Ice Age? 11. Why does the claim that the temperature is higher now than at any time throughout the past 1000 years seem less substantiated?

EXECISE 2

Найдите эквиваленты: для понимания, в течение прошлых полутора веков, долгосрочное изменение температуры, влиять на другие объекты, так называемые проверенные индикаторы, вызванный изменениями, значительные

колебания температуры, в масштабе тысячелетия, естественно имевший глубокие последствия, не иметь разногласий, известный в истории как, нельзя рассматривать как простой показатель, не включать в эти данные, практика ведения земледелия, вегетативный период.

EXECISE 3

Составьте фразы, соответствующие содержанию текста:

1. We have only used thermometers systematically and globally	over the past century and a half.
	many centuries ago.
	over past 20 years.

2. We can get a grip on the development of temperature by studying how it has affected other objects that we can measure today	– the so called proxy indicators.
	– the main indicators.
	– the unimportant indicators.

3. For instance, temperature has in many ways affected	the ice.
	the pollen.
	the land.

4. Equally, we can estimate temperature by looking at tree rings, because trees grow	wider rings in warm weather.
	wider rings in cold weather.
	more narrow rings in warm weather.

5. Throughout the past one million years there has occurred a series of	eight.	glacial/interglacial cycles, driven by the changes in earth's orbit around the sun.
	five	
	twenty	

6. We still live in the last interglacial period which began about 10,000 years ago	– the Holocene.
	– the Homo Sapience.
	– the Homoclimate.

7. When looking over the long 400,000 years of ice cores, the Holocene appears	the longest warm and stable period.
	the longest cold and stable period.
	the longest warm and unstable period.

Text D The ozone hole

Following the publication of an article in the British reputable science journal *Nature* in 1985 a new environmental problem was suddenly on everybody's lips – there was a hole in the ozone layer above the Antarctic. At ground level, ozone is a pollutant, but in the upper atmosphere a thin ozone layer protect people, animals and plants from the sun's harmful ultraviolet (UV-B). Ozone depletion is also linked in several ways to climate change, but the links are fairly weak and can be disregarded here.

Although the ozone hole of 1985 appeared over an essentially uninhabited area, its finding marked a crucial turning point in public awareness, because observations for the first time confirmed what had until then only been theoretical speculations. Since then, it has been unequivocally corroborated that the ozone layer over the inhabited mid-latitude also has declined – 1998 by about 3-6-precent below 1979 levels. This is important since a thinner ozone layer lets more UV-B rays through increasing eye disease (cataracts), skin cancer and photoaging (wrinkling and premature aging of skin).

The ozone depletion was caused by man. Already in 1974, two researchers at the University of California, Irvine, who later earned a Nobel Prize for their work, had suggested that the so - called chlorofluorocarbons (CFCs) could be breaking down the ozone layer. Much research has later confirmed this basic link. CFCs had become ubiquitous since the 1930s, because they were cheap chemically stable and completely non-toxic. During the 1960s the use of CFCs exploded; they were used among other things in refrigerators, spray cans and air-conditioners and as foam blowing agents and solvents. CFCs are mixed into the atmosphere, some reaching the stratosphere, where they are broken down by high-energy solar ultraviolet radiation into free chlorine. Through complex interactions, these chlorine atoms react with ozone, essentially breaking down thousands of ozone molecules for each chlorine atom.

The shocking prospect of increasing skin cancer and cataracts caused politicians to react quickly. The Montreal protocol was signed in 1987, followed by

the London (1990), Copenhagen (1992), Vienna (1995), another Montreal (1997) and Beijing (1999) protocols. The aim of these international agreements was initially to halve the consumption of the five main CFC gases in relation to 1986 figures and later to ban them almost entirely.

The international cooperation has rapidly born fruit: total production in 1996 was down below the production in 1996 was down below the production in 1960. At the same time, the total combined abundance of ozone of ozone-depleting compounds in the lower atmosphere peaked in about 1994 and is now slowly declining – actually faster than was predicted by the UN just four years earlier. The concentration of the ozone - depleting chlorine and bromide was predicted to peak in the stratosphere before the year 2000. The latest synthesis report of the UNEP ozone assessment predicts that "the ozone layer will slowly recover over the next 50 years. Likewise, the Antarctic ozone hole will slowly recover. Thus, today we have pretty much done what we can, ozone depletion is at its maximum and it will recover within the next 50 years.

Although the skin cancer rate has increased dramatically over the twentieth century, the long latency period means that the increases we see today are due to much more mundane causes.

That the ozone layer has damaged and now is at its lowest level, allowing in more UV-B radiation, is equivalent on the mid-latitudes to moving approximately 200 km (124 miles) closer to the equator – a move smaller than that from Manchester to London, Chicago to Indianapolis, Albany to New York, Lyons to Marseilles, Trento to Florence, Stuttgart to Düsseldorf or Christchurch to Wellington.

EXECISE 1

Выпишите незнакомые слова и составьте словарь, аналогичный предлагаемому в предыдущих уроках.

EXECISE 2

Переведите текст и составьте по одному вопросу к каждому абзацу.

EXECISE 3

Дайте названиz абзацам.

EXECISE 4

Выделите главную идею каждого абзаца и прочтите предложение, которое является главным для каждого абзаца.

EXECISE 5

Перескажите текст.

Unit 4 AIR POLLUTION

Text A Particles

Part 1

It is only within the last decade that we have realized how dangerous airborne particles actually are. It has long been known that soot, particles and sulfur dioxide contribute to coughing and respiratory disease.

There have been two main problems. For one thing, it has been extremely difficult to differentiate between the effects of the various forms of pollution.

The second problem is that we do not know *how and why* particles cause people to die. It is thought that particles enter the lungs and gain a foothold.

Until the middle of the 1980s all particles were measured and classified as soot or smoke.

The smallest particles come from combustion in motor vehicle engines, power stations and industry as well as from fire-places and wood burning stoves. The slightly larger particles come from dust and mechanical wear and tear. Although only 10 percent of all particles are man-made they are the most common in our urban environment.

The emission of SO_2 causing much of the particle pollution has fallen dramatically - in the EU by about 50 percent since 1980 and in the US by about 37 percent since 1970. This has been achieved: 1) by reducing consumption of fossil fuels, especially high-sulfur coal; 2) by using smoke scrubbing equipment on power plant smokestacks; 3) by increasing energy efficiency.

The political decision to limit sulfur emissions is closely linked to the question of acid rain. The fear of acid rain proved to be grossly exaggerated. The SO reduction

efforts turned out to be reasonable because they helped to reduce the particle pollution.

Part 2

However, reductions in urban areas have several other causes. Historically, a move away from sitting power plants in urban areas and the use of taller smokestacks were two of the primary causes of pollution reduction. At the same time we no longer use coke ovens and we have reduced our dependence on oil central heating, having instead changed to natural gas and district heating. Finally, cars pollute much less because of catalytic converters. The diesel vehicles now use low-sulfur diesel oil. However, compared to gasoline cars, diesel cars pollute much more. Although diesel cars make up only 6 percent of the total car park, they contribute 92 percent of all vehicle emissions. Thus, a marked increase in the use of diesel cars could slow the decline in particulate emissions.

Specialist literature has contained a lot of discussion about the degree to which legislation has been crucial to the reduction of air pollution. Many studies have not been able to document any noteworthy effect.

In a study of three US cities, it was found that the mandated pollution control had an effect, but that the effects of regulatory control "generally have been overshadowed by the effects of economic changes, weather and other factors." Generally it is probably fair to say that regulation is one of the reasons for the reduction of pollution but that other, technological factors also play a major role.

In conclusion, it is worth emphasizing that particle pollution is the most important air pollutant, and consequently the most important pollutant of all.

VOCABULARY 1:

Airborne	Воздушный	Urban	Городской
Particle	Частица	Partly	Частично
Sulfur	Сера	Dramatically	Совершенно
Contribute	Способствовать	Consumption	Потребление
Coughing	Кашель	Fossil	Ископаемое
Respiratory	Дыхательный	Fuel	Топливо
Lang	Легкие	High-sulfur	Высокосернистый
To enter	Проникать	Coal	Уголь

Combustion	Горение	Smokestack	Дымовая труба
Stove	Печь	Decision	Решение
dust	Пыль	Fear	Опасения
although	Хотя	Grossly	Чрезвычайно
Man-made	Искусственный	To exaggerate	Преувеличивать
Reasonable	Разумный	To gain a foothold	Укрепиться
Mechanical wear and tear	Износ	Smoke scrubbing	Воздухоочистительные

EXECISE 1

Найдите эквиваленты в тексте: различать оказываемое влияние, различные формы загрязнения, предполагается, весьма распространенные, значительное уменьшение, увеличение эффективности потребления энергии, полностью овладеть умами людей, ограничить выброс серы, рассмотреть позднее, оказаться разумными, намного больше.

EXECISE 2

Составьте список мер, принятых в защиту окружающей среды. Подтвердите словами из текста, насколько они оказались эффективными.

EXECISE 3

Составьте список источников загрязнения воздуха.

EXECISE 4

Ответьте на вопросы: 1. When have we understood how dangerous air pollution is? 2. What two main problems do we have today? 3. Where do air particles come from? 4. What measures have been taken recently to reduce particle levels? 5. Did these reduction efforts turn out to be efficient?

EXECISE 5

Согласны ли вы с кратким выводом по содержанию предыдущего текста:
Air pollution is not a new problem getting worse, but an old problem getting ever better.

VOCABULARY 2:

Area	Район	Crucial	Ключевой
Reduction	Уменьшение	Noteworthy effect	Заслуживающий внимания эффект
Cause	Причина	Mandate control	Полномочный контроль
A move away	Перемещение	To overshadow	Омрачать
Coke oven	Коксовая печь	To emphasize	Подчеркивать
Dependence	Зависимость	Consequently	Вследствие
Catalytic converter	Каталитический дожигатель	Benefit	Преимущество, польза
Diesel vehicle	Дизельные машины	Stem	Происходить
Gasoline car	Машины, использующие бензин	Unambiguously	Недвусмысленно
Emission	Выделение	Substantial	Основной, главный
Decline	Упадок	Drastically	Радикально
legislation	Законодательство	conclusion	Заключение

EXECISE 1

Найдите эквиваленты в тексте: быть вызванным рядом других причин, исторически сложиться, отказ от дальнейшего использования, система местного отопления, не быть больше зависимым настолько, система централизованного отопления, дизельное топливо с низким содержанием серы, отмеченный рост, замедлить снижение выброса частиц, специальная литература, изобиловать спорами, степень значительности законодательства, не быть в состоянии зафиксировать, было бы справедливо отметить.

EXECISE 2

Перечислите другие меры, повлекшие снижение уровня частиц в атмосфере.

EXECISE 3

Изложите свое мнение об эффективности роли законодательства и правительства, используя слова текста. Насколько эффективно внедрение и осуществление полномочного обязательного регулярного контроля за уровнем загрязнения окружающей среды? Что же является решающим фактором в борьбе за экологию ?

EXECISE 4

Составьте фразы, соответствующие содержанию текста.

	three	
1. There are have been	two	main problems of air pollution.
	one	

	small	
2.The	large	air pollution comes from dust, mechanical wear and tear.
	slightly large	

	lower	
3. The use of	taller	smokestacks was the cause of pollution reduction.
	medium-size	

		natural gas heating.
4. The cleanest type of heating is		oil central heating.
		district heating.

	gasoline cars.
5.The cleanest cars are	diesel cars.

	low-sulfur diesel cars.

The technological factor	
6. The mandated pollution control	plays a major role in pollution reduction.
The legislation	

Text B Lead

Lead was widely used even in antiquity because it was so easy to shape or mould into vessels and pipes. The Romans used a lot of lead in their water supply systems, and women used pulverized lead as makeup. Throughout the Middle Ages, lead was also widely used, mostly as an additive to make sour wine drinkable - often with painful, sometimes even fatal after-effects. In modern times, lead has proven an extremely useful metal in crystal glass, ceramic glazing, white paints, ammunition and printer's type. When the motor car came on to the scene, lead batteries provided electrical power, and lead was added to petrol to increase its octane rating.

Unfortunately, lead is also extremely toxic. Several scientists believe that the Roman upper class suffered from permanent lead poisoning because they drank water from lead pipes and used lead-based mugs, vessels and beauty creams. This have led to birth defects and widespread physical impairment and consequently have contributed to the fall of the Roman Empire.

It has been known for a long time that high concentrations of lead in the bloodstream can cause cramps, coma and death.

Globally about 90 percent of lead emissions comes from lead added to petrol. The leaded petrol now represents 2.2 percent of total lead consumption. The US started phasing out lead in gasoline in 1973 and they essentially completed the task in 1986. In the UK, a reduction was started in 1981 and in 1985 the allowed lead contents in gasoline had been reduced by two-thirds. Today, all US gasoline is unleaded, and 75 percent of the gasoline sold in the UK is unleaded too. The consequence for lead concentrations has been enormous.

The US Environmental Protection Authority estimates considerable benefits from this dramatic decline in lead pollution. It is estimated that about 22,000 deaths are avoided every year, which is about 1 percent of all deaths.

These figures are surprisingly large and demonstrate the amazing air pollution improvement. For the second worst air pollutant, the last 15-20 years have seen lead concentration levels falling dramatically by 80-97 percent.

VOCABULARY:

Lead	Свинец	Ammunition	Боеприпасы
To mould	Формовать	Battery	Аккумулятор
Vessel	Сосуд	Mug	Кружка
Pipe	Труба	Permanent	Постоянный
Pulverized	Порошкообразный	Impairment	Ухудшение
Additive	Добавка	Bloodstream	Кровообращение
Sour	Кислое	Cramp	Судорога
Crystal glass	Хрусталь	To phase out	Постепенно свертывать
Ceramic glazing	Гончарный обжиг	Complete	Полный
leaded	Освинцованный	Likewise	Подобно
To avoid	Избегать	Improvement	Улучшение
After-effect	Последствия	Octane rating	Октановое число

EXECISE 1

Найдите эквиваленты: система водоснабжения, широко используемый, в настоящее время, с появлением автомашин, проявить себя как чрезвычайно необходимый, легко принимающий форму, это привело, допустимое содержание, значительная польза, что составляет около одного процента, удивительное улучшение состояния воздуха.

EXECISE 2

Перечислите положительные свойства свинца.

EXECISE 3

Перечислите области применения свинца в античности, в средние века, в Римской империи, а также в настоящее время.

EXECISE 4

Найдите предложения в тексте, указывающие на токсичность свинца и степень его влияния на здоровье человека.

EXECISE 5

Насколько вредно использование свинца в составе бензина?

EXECISE 6

Найдите в тексте предложения, подтверждающие эффективность мер по снижению загрязнения воздуха частицами свинца.

EXECISE 7

Ответьте на вопросы: 1. What are advantages of lead as a metal? 2. Where and how is lead used today? 3. Why is it dangerous for our health? 4. Where does 90 % of lead emissions come from? 5. How effective were the efforts made against the second worst air pollutant?

EXECISE 8

Составьте фразы, соответствующие содержанию текста:

	in water supply system.
1. Pulverized lead is used	as make-up.
	to form vessels.

	to increase its octane rating.
2. Lead is added to petrol	to decrease its octane rating.
	to make it ecologically cleaner.

	coma and death.
3. The high concentration of lead in the bloodstream can cause	respiratory disease.
	heart disease.

	easy	
4. Lead is	difficult	to shape or mould.
	impossible	

Text C $S0_2$

The regulation of $S0_2$ emissions was primarily a consequence of the anxiety in the 1980s about acid rain and its effect on forests and lakes. Even though it later proved that the effect on forests was extremely slight or even non-existent, regulation had the positive side-effect that it reduced particle emissions. When SO_2 is emitted during combustion, part of the gas will oxidize and condense around tiny, unburned condensation nuclei to form particles. The greatest advantage of SO_2 emission reductions lies in avoiding these particles.

In addition, $S0_2$ damages buildings and cultural objects such as statues. Metal corrodes much faster. Marble and sandstone are damaged because SO_2 is converted into sulfuric acid which gradually eats away the stone. In the major US study the overall effect was found to be relatively minor. Sulfur dioxide can also reduce visibility, either as a light mist or as a dense gray smog like the smog familiar to Londoners. The cost of the reduced visibility in 1990 can be estimated at $12 per person in the US.

Finally, when $S0_2$ is deposited it actually makes a free contribution to the fertilization of forests and agricultural crops in particular. This contribution is estimated to be worth some $500 million annually in the US. In Denmark, where sulfur pollution was the highest, crops needing lots of sulfur (such as oilseed rape and cabbage) had their requirements covered through pollution. It is today unnecessary to give these crops extra sulfur.

In 1979 the Long-Range Transboundary Air Pollution convention was adopted in Helsinki, coming into force in 1983. First, in 1985 a strict protocol was signed, obliging European governments to reduce their emissions by 30 percent by 1993. But European emissions had already been on the decrease since 1975. The reduction has been achieved by changing to other sources of energy, using less sulfurous coal and the general use of smoke cleansing. European Union emissions have been declining

steadily since 1980. The emissions are expected to decline further, to a total reduction of more than 75 percent by 2010.

VOCABULARY:

Anxiety	Тревога	Sandstone	Песчаник
Exposed	Беззащитный	Sulfuric acid	Серная кислота
Slight	Хрупкий	Sulfur dioxide	Диоксид серы
To oxidize	Окисляться	Visibility	Видимость
To condense	Конденсировать	Mist	Туман
Condensation	Конденсация	Roughly	Небрежно
Side-effect	Побочный эффект	To deposit	Образовывать налет, отлагаться
Nuclei	Ядро	Fertilization	Удобрение
To corrode	Ржаветь	Oilseed rape	Масличный рапс
Marble	Мрамор	Requirement	Требования
Cleansing	Очистительный	Steadily	Постоянно
Amendment	Поправка	Transboundary	Трансграничное

EXECISE 1

Найдите в тексте ответы на следующие вопросы: 1. Насколько важна роль диоксида серы в образовании кислотных дождей? 2. Как образуются частицы диоксида серы? 3. В результате чего было достигнуто снижение загрязнения диоксидом серы? 4. Назовите положительное последствие от загрязнения диоксидом серы? 5. Перечислите виды отрицательного воздействия диоксида серы на окружающую среду?

EXECISE 2

Найдите эквиваленты: вступить в силу, быть подписанным, другие источники энергии, иметь побочный эффект, образование частиц, бесплатное

удобрение, быть оцененным стоимостью в, относительно маленький, удовлетворить потребности, незащищенные регионы, знакомый лондонцам, повсеместное использование оборудования по очистке дыма.

EXECISE 3

Найдите и переведите названия трех основных международных документов, принятых в защиту от данного загрязнителя?

EXECISE 4

Составьте фразы, соответствующие содержанию текста.

	the fertilization.
1. Sulfur dioxide makes a free contribution to	industry development.
	emission reduction.

	combustion.
2. Sulfur dioxide is emitted during	condensation.
	oxidization.

	sulfuric dioxide.
3. Sulfur dioxide is converted into	particles.
	gas.

	pollution.
4. Sulfur dioxide can reduce	visibility.
	fertilization.

Text D OZONE

Ozone forms a vital layer in the stratosphere, which protects us against ultraviolet rays from the sun. However close to the earth ozone is harmful to humans and affects plant growth. Ozone irritates the respiratory organs, causes rubber to disintegrate and negatively affects plant growth. Ozone is a secondary pollutant, because it is primarily created in a complex interplay between $N0_X$ and hydrocarbons. Ozone and the $N0_X$ are the major players in the formation of brown (photochemical) smog of the kind familiar in Los Angeles. This brown smog is seen today in many cities in the developing world.

Ozone is not believed to have any actual life-threatening effect. The UK experts on Air Quality Standards "found no evidence that exposure to the levels of ozone are likely to lead to long term damage to the respiratory system." On the other hand, it has a substantial impact on agriculture and horticulture. It is believed that the most significant economic damage from pollution is experienced by these industries. Ozone can, however, also reduce the risk and effect of fungal attacks.

Ozone pollution is generally measured in peak concentrations the most dangerous for health and vegetation effects. In the US, maximal ozone concentrations have declined since 1977 by almost 30 percent. Ozone levels have not been consistently monitored at the national level in the UK. In the 1997 UK ozone review, it was concluded that there was clear evidence of a reduction in peak concentrations.

For agriculture, it is estimated that all 15 countries in the EU will experience a decrease in crop ozone exposure. On average, the exposure level will have decreased from 1990 to 2010 by about 25 percent.

VOCABULARY:

SO_2 sulfur dioxide	Двуокись серы	Evidence	Доказательство
Vital	Жизненный	Exposure	Выставление на солнце
Layer	Слой		
Ultraviolet	Ультрафиолетовый	Fungal attack	Грибковое поражение
Ray	Луч		
Hole	Дыра	Horticulture	Садоводство, огородничество
To irritate	Раздражать		

Rubber	Резина	To monitor	Советовать, рекомендовать
To disintegrate	Расщеплять		
Interplay	Взаимодействие	To encounter	Столкнуться

EXECISE 1

Найдите в тексте ответы на следующие вопросы: 1. Назовите отрасли экономики, испытывающие негативное влияние озонового загрязнения? 2.Может ли озон оказывать какое-либо воздействие на организм человека? 3.Назовите основные отрицательные последствия от влияния озона на окружающую среду? 4. Что представляет собой озоновый слой? 5. Наряду с двуокисью азота в образовании какого вида загрязнения городов принимает участие озон?

EXECISE 2

Найдите эквиваленты: значительный ущерб, очевидное доказательство, данные о максимальной концентрации, комплексное взаимодействие, долгосрочное нарушение деятельности, действительно угрожающее жизни воздействие, уменьшение воздействия озона на урожай.

EXECISE 3

Составьте фразы, соответствующие содержанию текста:

	ultraviolet rays.	
1.Ozone protects against	X-rays.	
	violet rays.	

	will have decreased	from 1990 to 2010 by about 25 percent.
2.On average the ozone exposure level	will have increased	
	will have been constant	

	registered.
3. Ozone levels have been consistently	monitored.
	written.

	agriculture.
4.Ozone has a substantial impact on	textile.
	utility market.

	harmful	
5.Ozone is	good	to humans.
	useful	

Unit 5 FOREST DEATH

Text A Acid rain

Acid rain was the great horror of the 1980s. We saw the sick and dying trees on the TV news. It was told that acid rain was killing our forests. Looking at publications from the 1980s we will see that they did not spare their readers . Acid rain was the "invisible plague" which was creating an "ecological Hiroshima". The UN Brundtland report stated that "in Europe, acid precipitation kills forests". Several present-day ecology books repeat the charge. A popular book published in 1989 with the title *Acid Rain: Threats to life* told us:

"An acid plague is sweeping the Earth. The rain, snow, fog, and mist have become acid because of pollution from factories and cars all over the world, and it has been converted to acid rain.

Acid rain destroys our buildings and statues but it is also threatens the natural environment.

One third of the German forests have been attacked, so the trees are either dead or dying.

4000 Swedish lakes are dead and 14,000 are in the process of dying...

In cities all over the Earth, people are being suffocated – or - dying - because the smoke cannot escape...

Acid rain has become one of the most serious threats to life here on Earth".

Today we know that acid rain wasn't so dangerous ."Acid rain" has typically been used as a collective term for damage to forests, lakes and buildings believed to be caused by emissions of NO or sulfur dioxide. In fact all rain, even before industrialization, has been naturally acidic. The expression acid rain is associated with

the extra acid that arises when NO or sulfur dioxide reacted with water create sulfuric or nitric acid.

VOCABULARY:

To spare	Беречь, жалеть	To suffocate	Задыхаться
Plague	Чума, бедствие напасть	A bit shrill	Немного резкий
To flat out	Изощряться	To make out	Различить, жить
Precipitation	Выпадение осадков	Nitric acid	Азотная кислота
To repeat the charge	Повторить обвинение	Fog	Туман, дымка, мгла, завеса
To sweep	Уничтожать	Mist	
To convert	Преобразовывать	Sulfuric acid	Серная кислота

EXECISE 1

Соответствуют ли следующие высказывания содержанию текста:

- Acid rain was the great horror of the 1990s.
- Acid rain was killing our animals.
- An acid plague is sweeping the Moon.
- People are enjoying because the smoke can’t escape.
- NO or sulfur dioxide reacted with the water to create sulfuric or nitric acid.

EXECISE 2

Закончите предложения:

1.“Acid rain” has typically been used as a collective term	for damage to forests.
	for fertilization.
	for pollution.

2.Acid rain” has typically been believed to be caused by emissions	of NO or sulfur dioxide.
	of lead.
	of oil and gas.

3. The extra acid could arise when NO or sulfur dioxide reacted	with water	to create sulfuric or nitric acid.
	with oxygen	
	with lead	

4. The expression acid rain has been associated	with the extra acid.
	with moderate acid.
	with average acid.

5.	The rain, snow, fog, and mist	have become acid because of pollution from factories and cars all over the world.
	The building and statues	
	The factories and the plants	

Text B Forest Death

In the late seventies and early eighties, areas of central Europe were observed to be suffering extreme forest death. The hardest hit areas in Bavaria had up to 40 percent sick and dying trees. A group of German scientists predicted that Europe's forests were threatened by acid rain and 10 percent of all trees were at risk. Despite fierce criticism from other scientists, the images of the sick and dying trees reached all round the world, sowing anxiety both in other European countries and in the US.

The fear of and assertions about acid rain led to numerous scientific investigations. The official American acid rain project, the National Acid Precipitation Assessment Program (NAPAP), became the world's biggest, longest and most expensive; it spanned most of a decade, involved about 700 scientists, and cost half a billion dollars. A whole series of questions were looked into in order to expose links between acid rain and forests, lakes and buildings.

We examine the results of one of NAPAP's long-term controlled experiments, in which seedlings from three species of trees were exposed to various concentrations of acid rain over a period of almost three years. The trees were cultivated in relatively poor soil in order to maximize any negative effects of the acid rain. No acid rain effect was detected on any of the three species of tree. Even with precipitation almost ten times as acidic as the average acid rain in the eastern US (pH 4.2) the trees grew just as fast. In fact many of the NAPAP's studies showed that trees exposed to moderate acid rail grew faster. Some even longer controlled experiments were carried

out in Norway, and here too the conclusion was that the predicted negative effects of acid rain “could nor be demonstrated.” For this reason NAPAP’s conclusion was that “the vast majority of forests in the U.S. and Canada are not effected by decline... Moreover there is no case of forest decline in which acidic deposition is known to he a predominant cause.”

VOCABULARY:

Hit	Известный	To detect	Обнаруживать
To predict	Предсказывать	Precipitation	Выпадение осадков
Fierce	Жесткий, лютый	Moderate	Умеренный
criticism	Критика	Seedling	Саженец
To sow	Сеять	Decline	Упадок, гибель
Assertion	Утверждение	Deposition	Осадок
To span	Длиться, простираться	Predominant	Преобладающий
To expose	Подвергать воздействию	Vast majority	Подавляющее большинство

EXECISE 1

Расскажите об экологической программе NAPAP. Кто принимал в ней участие? На какой период времени она была рассчитана? Какие денежные средства были затрачены на ее реализацию? Проводились эксперименты по изучению вредного воздействия чего? Какова была их продолжительность? Проводилось изучение воздействия осадков какой концентрации?

EXECISE 2

Ответьте на следующие вопросы: 1. Когда опасность кислотных дождей стала восприниматься как первостепенная угроза лесам? 3. В каких странах

проводились исследования по изучению вредного воздействия кислотных дождей? 4. Выскажите свою точку зрения о воздействии кислотных дождей на леса, используя факты из текста.

EXECISE 3

Найдите эквиваленты: умеренный кислотный дождь, в начале 70-х годов, подвергаться риску, нет ни одного случая, быть основной причиной, в конце 60-х годов, продолжаться более одного десятилетия, сеющий страх.

EXECISE 4

Составьте фразы, соответствующие содержанию текста:

1. The National Acid Precipitation Assessment Program (NAPAP) became	the world's biggest, longest and most expensive.
	the world's smallest, shortest and cheapest.
	the world's biggest and cheapest.

2. The National Acid Precipitation Assessment Program (NAPAP) spanned	most of a decade.
	most of the century.
	most of the month.

3. The National Acid Precipitation Assessment Program (NAPAP)	involved about 700 scientists and cost one thousand dollars.
	involved about 700 scientists and cost half a billion dollars.
	involved about 100 scientists and cost half a billion dollars.

4. The trees were cultivated in relatively	poor soil	in order to maximize any negative effects of the acid rain.
	rich soil	
	average soil	

5. The seedlings from three species	of trees	were exposed to various concentrations of acid rain over a period of almost three years.
	of animals	
	of flowers	

EXECISE 5

Согласны ли вы с краткими выводами по содержанию предыдущего текста:

- Unfortunately, the myth of forests killed by acid rains lives in many places.
- It is stated quite casually how personal health problems are turning into public environment issues.
- It is simple to write ‘ Sulfur in the atmosphere produces acid rain. Acid rain kills forests. But not borne out by the evidence’.

Text C Other causes of Forest Death

It has turned out that forest death never actually affected more than 0.5 percent of the overall European forest area. It also turns out that the substantial local forest death in Bavaria, Poland and the Czech Republic was due not to acid rain but to local pollution. Localized pollution has been regulated locally, unlike acid rain which crosses national boundaries. SO_2 emissions have been reduced 30 percent in Germany and 50 percent in both Poland and the Czech Republic. Local SO_2 concentrations decreased 50-70 percent over just seven years from 1989.

The growth of European forest has not been reduced, as the theories about acid rain had predicted. “During the past few decades, forest growth has strongly increased over large parts of Europe”, concludes a Dutch study. Since the 1950s trees have begun to grow faster and faster. It is due to the fact that part of the trees fertilization requirement is provided for by nitrogen pollution.

Large-scale reports are prepared now about the health of various species of trees in Europe. The proportion of trees with heavy foliage loss and the proportion of discolored trees is measured. This proportion grew dramatically from the first reports in 1983 and led to panic. However, this was due to a change in the method of calculation.

Today, the proportion of trees showing heavy foliage loss is over 25 percent. Many people claim that our forests are in a bad state. According to frequently advanced theory, the pollution does not directly cause damage to the trees, but it weakens the trees’ resistance, making them more susceptible to insect attack, frost and

drought. The effect of this pollution can be indirect and delayed. However, there is very little or no correlation between the polluted areas and the forest death.

The European Environment Agency concludes that “a causal connection cannot… be established between an input of acid deposition… and observed foliage reduction». The monitoring results show an increasing defoliation, but it may be due to the aging of the monitored tree stands.

German scientist has analyzed photographs of forest areas taken 30-60 years ago and found that the proportion of damaged trees was the same. Foliage loss is a non-specific expression that applies to numerous specific, familiar diseases.

VOCABULARY:

substantial	Значительный	Correlation	Взаимоотношение
nitrogen	Азот	Deposition	Осадок
Foliage	Листва	Defoliation	Опадение листвы
Understandably	Понятно	Aging=ageing	Старение
Drought	Засуха	Stand	Лесопосадка, лесонасаждение
Susceptible	Восприимчивый	To urge	Подстегивать, подгонять
To weaken	Ослаблять		

EXECISE 1

Найдите эквиваленты: контролируемый на местном уровне, локализованное загрязнение, не иметь ничего общего, значительно увеличиться, быть обеспеченным за счет, всеобъемлющий доклад, согласно одной часто выдвигаемый теории, истинность данной теории не так легко установить, часто выдвигаемые претензии, казаться поразительным.

EXECISE 2

Следующие названия абзацев текста расставьте в правильном порядке:

- Foliage loss is normal process.
- The trees continue to grow.
- The theory of acid rain damage.
- The panic reports.
- The natural death of forests.

EXECISE 3

Добавьте по одному предложению к каждому абзацу текста в соответствии с содержанием:

- The new methods show new results.
- Why do we consider these phenomena together?
- SO emissions have been reduced 34 percent in Bavaria.
- No more special fertilization is required.
- We carry out more detailed researches.
- This natural process is not taken into account.

EXECISE 4

Составьте предложения со следующими выражениями.

To increase up to …%	Увеличить до …%
Decrease of …%	Уменьшение в …%
By …%	На …%
The …% increase	…% (процентное увеличение)
A guarantee for …% of	Гарантия на …% от
To increase it to …%	Увеличить это до …%

Unit 6 WATER POLLUTION

Text A Oil pollution in the oceans

On the subject of ocean pollution, it is traditional to quote Thor Heyerdahl. In 1947, he traversed the Pacific on his Kon Tiki expedition, without catching sight of people, ships or rubbish for weeks. On his second expedition in 1970, when he crossed the Atlantic with his boat the Ra II, he saw "far more oil lumps than fish." Heyerdahl concluded: "It became clear to all of us that man-kind really was in the process of polluting its most vital wellspring, our planet's indispensable filtration plant, the ocean."

But the oceans are so incredibly big that our impact on them has been astoundingly insignificant - the oceans contain more than 1,000 billion billion liters of water. The UN's overall evaluation of the oceans concludes: "The open sea is still relatively clean. Low levels of lead, synthetic organic compounds and artificial radionuclides, though widely detectable, are biologically insignificant. Oil slicks and litter are common along sea lanes, but they are a minor consequence to communities of organisms living in open-ocean waters". The lumps of oil are numerous. It is estimated that in 1985: 1) about 60 percent of the marine sources of oil pollution came from the routine tanker transport operation; 2) about 20 percent came from regular oil spills of the kind we see on TV; 3) about15 percent come from natural oil seepage at the bottom of the sea.

Routine oil pollution is due to the fact that tankers use sea water in their tanks as ballast when they sail without oil. The oil remnants get mixed into the ballast water, which on arrival gets flushed out into the harbor. Several international agreements have regulated and to a large degree reduced the extent of routine oil pollution. They demanded by law new techniques for the handling of ballast water, e.g. exploiting the fact that water and oil separate (ensuring that only the bottom layer of water is poured out on arrival), removing the last remnants of oil in the tanks (by cleaning the tanks with oil instead of water). They also demanded improved waste facilities in port and separate water ballast tanks.

Natural oil spills originate from cracks in the bottom of the sea above oil reserves. The mankind's exploitation of oil has relieved the pressure on many oil pockets and reduced the natural leak of oil. However, these two sources of oil pollution has not been documented over time.

Most tanker accidents occur close to land and the large spills affect the local fauna and flora. We are all familiar with the typical TV news scenario: oil-laden birds expiring before our eyes on the evening news, black-coated seals, the frantic cleanup efforts to avoid ecological catastrophe, and afterwards the massive bill. Several reports begin to question whether these efforts are worth the hefty price tag.

The oil is a naturally occurring substance. During a short period, most of the oil will evaporate, degrade biologically and chemically, or form relatively harmless lumps of tar. The British official monitoring program in 1993 found that "by 1994 the contamination levels had fallen to the levels observed at sites remote from contamination."

VOCABULARY:

To traverse	Пересекать	Oil slick	Пятно нефти
Rubbish	Мусор	Sea lane	Морской путь
Oil lump	Большое количество нефти	Consequence	Последствия
Wellspring	Устье скважины, самоизлив нефти	Community	Сообщество, группа
Indispensable	Необходимый	Oil spill	Разлив нефти
Filtration plant	Оборудование для фильтрации	Oil seepage	Просачивание, выход нефти
Impact	Влияние	Sediment erosion	Размывание осадочной породы
Astoundingly	Поразительно	Ballast	Балласт
Compound	Компонент	Oil remnant	Остаток нефти
detectable	Обнаруживаемый	Flushed out	Прогонять, сгонять
Harbor	Гавань, порт	Extent	Пространство, расширение
To exploit	Эксплуатировать	To pour out	Выливать
Waste facilities	Оборудование по переработке отходов	To originate	Давать начало, порождать
To relieve	Помогать, освобождать	Leak	Утечка
Oil pocket	Нефтесборник	Presumably	Предположительно
Oil-laden	Отяжеленный нефтью	Frantic	Неистовый
To expire	Гибнуть	Price tag	Ценники на нефть

crack	Трещина	Hefty	Большой, огромный

EXECISE 1

Найдите переводы, соответствующие словосочетаниям на английском языке.

1. Sight of rubbish	A. Сливаться (быть слитым)
2. Routine tanker transport operation	B. Повседневная эксплуатация танкеров
3. To get flushed out	C. Остатки человеческой жизнедеятельности
4. Demanding by law	D. Потребовав от имени законодательства
5. To handle ballast water	E. утилизировать воду, использованную в качестве балласта
6. Exploiting the fact	F. Верхний слой
7. Extent of pollution	G. Расширение загрязнения
8. Bottom layer	H. Используя тот факт, что
9. Separate water ballast tanker	I. Танкер, спроектированный с раздельным размещением воды для балласта
10. Pressure on the oil pocket	J. Вымазанные нефтью тюлени
11. Natural leak	K. Естественная утечка
12. Black-coated seal	L. Давление на нефтесборники
13. Afterwards the massive bill	M. Огромные счета, получаемые впоследствии
14. Frantic cleanup efforts	N. Проникать из расщелин, образовавшихся на поверхности
15. To get mixed into	O. Вода и нефть не смешиваются друг с другом
16. Water and oil separate	P. Оправдывать высокую стоимость
17. To originate from cracks in the bottom	Q. Героические усилия по очистке
18. To be worth the hefty price tag	R. Смешиваться (быть смешанным)

EXECISE 2

Расставьте предложенные названия абзацев текста в правильном порядке:

- The natural properties of oil
- Our impact on the ocean
- Main sources of oil pollution
- Tanker's operation and maintenance
- The places of big oil pollution

EXECISE 3

Добавьте в каждый абзац по предложению в соответствии с содержанием текста:

- It's an integral part of our planet life.
- We need new technologies to provide environmentally safe operation of tanker transport.
- Don't we pay too much for oil?
- We hope for the best.
- To sum up we can say that number of oil lumps increase.

EXECISE 4

Составьте фразы, соответствующие содержанию текста:

1.On the subject of ocean pollution, it is traditional to quote	Thor Heyerdahl.
	Charles Darvin.
	Jacques-Ives Cousteau.

2. The oceans are so incredibly big that our impact on them has been astoundingly	insignificant.
	important.
	considerable.

	numerous.
3. The lumps of oil are	insignificant..
	relatively few.

4. It is estimated that in 1985 about	60 percent	of the marine sources of oil pollution came from the routine tanker transport
	40 percent	

	20 percent	operation.

5. It is estimated that in 1985 about	40 percent	came from regular oil spills of the kind we see on TV.
	20 percent	
	5 percent	

6. It is estimated that in 1985 about	60 percent	come from natural oil seepage at the bottom of the sea.
	15 percent	
	80 percent	

EXECISE 4

Ответьте на следующие вопросы: 1. Please find and translate the opinion of Thor Heyerdahl. 2. What is the total picture of ocean pollution from different sources? 3. Please explain, how do the tankers pollute the ocean water? 4. What measures should be taken in order to avoid this pollution? 5. What are two main natural sources of oil pollution? 6. What consequences can the tankers' accidents result in? 7. Is oil a naturally occurring substance?

Text B Pollution in coastal waters

As far as people are concerned, one of the most relevant indicators of coastal water quality is its health risk. Water contaminated with bacteria, viruses, protozoans, fungi and parasites can cause ear or skin infections on contact. The inhalation of contaminated water can cause respiratory diseases. These pathogens typically live in the intestines of warm-blooded animals and are shed in their feces.

It is often difficult to analyze the presence of the many possible pathogens. Most regulations use concentrations of easily analyzed fecal bacteria as indicators of contaminated water. Earlier, contaminated water often came from unregulated sewers. Today, with well-regulated sewage treatment, most contamination happens because of sewage overflows and polluted storm water runoff.

Coastal waters are also the habitat for large populations of flora and fauna. The most conspicuous problem is oxygen depletion – so called hypoxia - and algae blooms that occure in many parts of the world. This condition was described as the UN's main worry about coasts in the world:

“The rate of introduction of nutrients, chiefly nitrates but sometimes also phosphates, is increasing”. The areas of eutrophication are expanding, along with enhanced frequency and scale of unusual plankton blooms and excessive growth. Two major sources of nutrients to coastal waters are sewage disposal and agricultural runoff from fertilizer-treated fields and from intensive stock raising.

VOCABULARY

Bacteria	Бактерия	Sewer	Сточная труба
Fungi	Грибки	Runoff	Наводнение
Protozoan	Простейшее животное	Sewage treatment	Обработка сточных вод
Parasite	Паразиты	Fecal	Фекальный
Inhalation	Ингаляция, вдыхание	Protein	Белок
Pathogen	Патогенный микроорганизм	Algae bloom	Цветение водорослей
Intestine	Кишечник	Conspicuous	Заметный
To shed	Сбрасывать	Depletion	Истощение
Feces	Фекалии	Hypoxia	Гипоксия
Eutrophication	Эутрофикация	Enhanced	Усовершенствованный

EXECISE 1

Ответьте на следующие вопросы: 1. What is the most relevant indicator of water quality? 2. What diseases can cause contaminated water? 3. What pathogens can be easily analyzed as indicators of contaminated water? 4. What do the contaminated water come from most often? 5. What is the importance of coastal waters? 6. What are the most conspicuous problems due to water contamination?

EXECISE 2

Найдите эквиваленты следующих выражений: что касается людей, передающаяся при контакте инфекция, трудно обнаружить присутствие, чаще всего происходить, переполнение стоков, затопление грязной водой в результате штормов, среда обитания больших популяций, легко исследуемые, большинство нормативных актов, основываться на показателе концентрации.

EXECISE 3

Составьте фразы, соответствующие содержанию текста:

1. As far as people are concerned, one of the most relevant indicators of coastal water quality is	its health risk.
	its chemical pollution.
	its clarity.

2.Most regulations use concentrations of easily analyzed	viruses	as indicators of contaminated water.
	fecal bacteria	
	protozoans	

3. The areas of eutrophication are	expanding.
	decreasing.
	the same.

Text C Health effects from fertilizer

Synthetic fertilizer has allowed a vast increase in food production. The Swedish Academy of Sciences awarded the Nobel Prize for Chemistry to Fritz Haber in 1919. They argued that Haber had created "an exceedingly important means of improving the standards of agriculture and the well-being of mankind."

Today, it is estimated that 40 percent of all crop nitrogen comes from synthetic fertilizer, and about one-third of human protein consumption depends on synthetic fertilizer. Moreover, fertilizer allows us to produce more food on less farmland. This is one of the reasons why the global population could double from 1960 to 2000 and get better fed, although farmland area only increased 12 percent. The extraordinary increase in fertilizer availability made possible to avoid a dramatic increase in human pressure on other natural habitats. If fertilizer use had remained at 1960 level, we would need at least 50 % more farmland than the present day use – the equivalent of covering almost a quarter of the global forests.

Fertilizer makes up the main part (about 75%) of the extra nitrogen release.

The two global nitrogen problems are nitrous oxide contributing to global warming and ozone depletion. However, nitrous oxide's contribution to global warming is only about one-tenth that of CO_2. The latest nitrogen review concluded that "both fossil fuel burning and the direct impact of agricultural fertilization have been considered and rejected as the major source "of nitrous oxide.

In the 1980s nitrates in the groundwater came very much into focus. The Danish environment minister, Christian Christensen, stated flatly that nitrate pollution had serious consequences because:

"a clear relationship has been established between stomach cancer and high levels of nitrates in drinking water. And many infants are in direct danger because they get much of their water from their food. This can result in slow asphyxiation because excessive nitrate inhibits the blood's absorption of oxygen. Internal organs can also break down so that the children become ill or have difficulty concentrating. For this reason I do not dare to drink nitrate-polluted water and I will not allow my child to do so either."

Most of the nitrates we consume come from vegetables, especially beets, celery, lettuce and spinach, which can give us between 75 and 100 mg of nitrates a day – vegetarians get more than 250 mg.

The Hypoxia Assessment identifies two main “options to reduce the nitrogen load.” First, fertilizer usage on agricultural lands could be reduced, both by a general reduction and through better fertilizer application and management, alternative crops and wider spacing of drains. Second, the creation of riparian zones and wetlands would diminish the nitrogen load. When water and nitrogen compounds flow through these areas, several microbiological processes turn significant amounts of the compounds back into N_2, effectively making it unavailable for further plant use.

VOCABULARY:

Nitrous	Азотистый	To dare	Решаться
Nitrogen	Азот	Celery	Сельдерей
Flatly	Категорически	Lettuce	Салат
Consequence	Последствие	Spinach	Шпинат
Infant	Ребенок	To space	Оставлять промежутки
Asphyxiation	Удушение	Riparian	Прибрежный
Excessive	Чрезмерный	Wetland	Заболоченная территория
To Inhibit	Запрещать	Absorption	Поглощение

EXECISE 1

Переведите следующие выражения: to come into focus, to have difficulty concentrating, wide spacing the drains, to make it unavailable.

EXECISE 2

Ответьте на вопросы: 1. Who did the Swedish Academy of Science award to the Nobel Prize for Chemistry in 1914? 2. What were the arguments of Swedish Academy of Science? 3. What is the main source of nitrogen? 4. Is fertilizer useful? 5.What are the two global nitrogen problems? 6. When did nitrates come into focus? 7. What are the consequences of nitrate pollution for our health? 8. Where do we consume nitrates from? 9. Identify, please, the main options to reduce the nitrogen load?

EXECISE 3

Найдите эквиваленты: обширный прирост в производстве продуктов питания; чрезвычайно важные средства; потребление белка человеком; вырасти в два раза; начать лучше питаться; территория сельскохозяйственных земель; лучшее использование удобрений; лучшее руководство процессом внесения удобрений; сделать недоступным; альтернативные зерновые культуры; превратить обратно в; прямое воздействие; стать центром внимания; подвергаться прямой опасности; трудно сосредоточиться.

EXECISE 4

Составьте фразы, соответствующие содержанию текста:

1. Synthetic fertilizer has allowed	a vast increase	in food production.
	a decrease	
	a small increase	

2. The Swedish Academy of Sciences awarded the Nobel Prize for Chemistry to Fritz Haber	in 1914.
	in 1991.
	in 1999.

3. Today, it is estimated that 40 percent of all crop nitrogen comes from	synthetic fertilizer.
	fossil fuel burning.
	the direct impact of agriculture.

4. Most of the nitrates we consume come from	vegetables.
	fruit.
	beverages.

5. Nitrates in the groundwater came very much into focus.	in the 1980s.
	in the 1990s.
	in the 2000s.

6. Fertilizer allows us to produce more food on	less farmland.
	more farmland.
	the same farmland.

7. The Danish environment minister, Christian Christensen, stated flatly that nitrate pollution had	serious consequences.
	insignificant consequences.
	unimportant consequences.

EXECISE 5

Согласны ли вы с кратким выводом по содержанию предыдущего текста:
Of course, to a certain extent we can use our fertilizer better and in the developed part of the world pay our way to avoid eutrophication, but we also need to ask whether this is the best allocation of our scarce resources.

Text D Pollution in rivers

From a global point of view, rivers are important because they are major suppliers of water for drinking, personal hygiene purposes, industry and agriculture. In as far as water is used to drink, it is absolutely vital that it does not contain too many coli bacteria, because this would indicate the presence of other, more serious bacteria and viruses.

The fecal pollution starts to increase. Rivers in Australia, Japan, and the US all have fairly high coliform levels. However, when countries get rich enough they use groundwater to a much greater extent. It diminishes the urgency and political inclination to push for ever lower fecal pollution levels. Nevertheless, the conclusion remains true for the large majority of countries that depend on rivers for drinking water. At the outset richer means more polluted rivers, but beyond a fairly low level. Richer actually implies less fecal pollution in the rivers.

Biologically speaking, however, the level of oxygen is a much more important measure of water quality than fecal coliform. Dissolved oxygen is absolutely essential for the survival of all aquatic organisms - not only fish but also invertebrates such as crabs, clams, zooplankton, etc. Moreover, oxygen affects a vast number of other water indicators, not only biochemical but esthetic ones like odor, clarity and taste. Consequently, oxygen is perhaps the most well-established indicator of water quality.

We have only looked at typical pollution indicators, such as coliforms and oxygen. But equally important, we may want to look at the aquatic levels of chemical pollution. Here we see the same pattern as in the coastal areas. In the US, a National Contaminant Biomonitoring Program has examined the presence of long-lived toxic contaminants in the aquatic environment through analysis of fish. Fish were selected because they tend to accumulate pesticides. The European starling was chosen because of its varied diet and wide geographic distribution.

Summing up rivers probably experience better water quality as income increases. This tendency towards improved oxygen levels has also been confirmed when analyzing more than 200 European rivers. Moreover, general quality measures for both the UK and the US show better river water quality. Persistent pollutants in fresh waters have been decreasing dramatically. When measured nationally through fish in the US or through herring gull eggs in the Great Lakes, pollutant concentrations have declined 80-90 percent.

VOCABULARY:

Fecal coliform	Фекальные коли-бактерии	Fairly	Довольно, в некоторой степени
Coli bacteria	Коли-бактерии	Hygiene	Гигиена
Virus	Вирус	Dissolved	Растворенный
Urgency	Безотлагательность	Aquatic	Водяной
Inclination	Склонность, тенденция	Contaminant	Загрязняющее вещество
To push for	Настаивать	Clam	Морской моллюск
Nevertheless	Тем не менее	Odor	Запах
At the outset	Вначале	Clarity	Прозрачность
Beyond	В пределах, вне	Pattern	Образец
Pesticide	Пестицид	Invertebrate	Беспозвоночные
Starling	Скворец	Herring gull	Серебристая чайка

EXECISE 1

Переведите следующие выражения: lower fecal pollution levels, we may want to look.

EXECISE 2

Ответьте на вопросы: 1. Why are rivers important? 2. Why is it vital to determine the continence of coli bacteria in water? 3. Do the rich countries pollute less their rivers? 4. What are two important measures of water quality? 5. What is the second important measure of water quality? 6. Why does oxygen affect a vast number of water indicators? 7. What are esthetic indicators of water quality? 8. How can we determine the aquatic levels of chemical pollution? 9. How has a National contaminant Biomonitoring Program examined the presence of long-lived toxic in the aquatic environment? 10. What is the interconnection between the water quality ant the increased incomes? 11. What is the main tendency of the last decades?

EXECISE 3

Найдите эквиваленты: в большом масштабе, настаивать на, с мировой точки зрения, для целей личной гигиены, уровни загрязнения воды химикатами, основной поставщик, намного более важный, самый признанный, устойчивый, токсичные загрязнители, разнообразная диета, подводя итоги, постоянные загрязнители, иметь склонность к накоплению, говоря с биологической точки зрения, большое количество.

EXECISE 4

Составьте фразы, соответствующие содержанию текста:

1. It is absolutely vital that water does not contain too many	coli bacteria.
	viruses.
	oil.

2. Dissolved oxygen is absolutely essential	for the survival of all aquatic organisms.
	for our well-being.
	for coli bacteria.

3. Esthetic indicators of water quality are	odor, clarity and taste.
	dissolved oxygen.
	coli bacteria.

4. Fish were selected because they tend to accumulate	pesticides.
	nitrates.
	oxigen.

GRAMMAR REVISION
ВРЕМЕНА ГРУППЫ INDEFINITE

Present Indefinite

Утвердительная форма	Вопросительная форма	Отрицательная форма
I walk	Do I walk?	I do not (don't) walk
He walks	Does he walk?	He does not (doesn't) walk
She walks	Does she walk?	she does not (doesn't) walk
It walks	Does it walk?	It does not (doesn't) walk
We walk	Do we walk?	We do not (don't) walk
You walk	Do you walk?	You do not (don't) walk
They walk	Do they walk?	They do not (don't) walk

Типичные обстоятельства для Present Indefinite: usually, sometimes, often, seldom. Present Indefinite выражает действие, которое происходит в настоящем постоянно и периодически. Отсюда его название – настоящее неопределённое.

EXECISE 1

Поставьте предложения в вопросительную и отрицательную форму.

1. Her sister studies at an Institute. 2. My mother usually comes home at 6 o'clock. 3.We often go to school together. 4. Tom and Nick play football very well. 5. His brother finishes his work at 6 o'clock. 6. I meet Jane every day. 7. They usually spend their holidays in the Caucasus. 8. His friend lives in Paris. 9. I get up late on Sundays.

EXECISE 2

Раскройте скобки, употребляя глаголы в Present Indefinite.

1 . He (speak) to us every morning.
2. He often (write) to us.
3. They seldom (eat) any oranges.
4. Mr. Smith always (pay) his bills?
5. It (rain) every week.
6. They often (send) us parcels.

7. We always (meet) him on Mondays.
8. They always (have) eggs for breakfast.
9. They seldom (go) to the movies?
10. He often (ask) me to dinner.
11. They often (not come) here.
12. I (not play) football.

EXECISE 3

Раскройте скобки, употребляя глаголы в Present Indefinite или Present Continuous.

1. The man who (to speak) with my mother (to be) our neighbor who (to live) across the street. 2. It (to be) a very interesting scientific film. In it you can see how the plants (to grow) right before your eyes. 3. Where you (to hurry)? — I (to hurry) to the railway station. My sister (to come) from Moscow. 4. You (to hear) the speaker well? — Yes, I (to hear) him clearly. I (to listen to) very attentively, but still I (not to understand) the main point of his speech. 5. Don't come into this room. Father (to work) there now. 6. Where are you going this Sunday? — This Sunday I (to go) to the country, but usually on Sunday I (to stay) at home.

EXECISE 4

Составьте вопросы в Present Indefinite и задайте их своим товарищам.

HOW GREEN ARE YOU?				
	QUESTIONS	1	2	3
1	Reuse bags, containers, paper, boxes and others items			
2	Buy reusable products			
3	Select products with the least wasteful packing			
4	Buy products that can be recycled and make sure to recycle them			
5	Buy products made of recycled materials			
6	Buy, sell, or donate used goods such as clothes, furniture, and appliances			

7	Make sure your water faucets are turned off when you're nor using them			
8	Be creative – look for opportunities to reduce trash!			

Future Indefinite

Утвердительная форма	Вопросительная форма	Отрицательная форма
I will walk	Will I walk?	I will not (won't) walk
He will walk	Will he walk?	He will not (won't) walk
She will walk	Will she walk?	She will not (won't) walk
It will walk	Will it walk?	It will not (won't) walk
We will walk	Will we walk?	We will not (won't) walk
You will walk	Will you walk?	You will not (won't) walk
They will walk	Will they walk?	They will not (won't) walk

Типичные обстоятельства для Future Indefinite: next month, next week, next year, tomorrow, the day after tomorrow. Future Indefinite выражает действие, которое произойдет в будущем.

EXECISE 1

Поставьте предложения в вопросительную и отрицательную форму.

1. My sister will graduate from the University next year. 2. 1 shall go to the cinema tomorrow. 3. They will play tennis on Saturday. 4. We shall translate this text the day after tomorrow. 5. He will write a letter to his sister tomorrow. 6. My parents will go to the South next year. 7. 1 shall finish this work in a week. 8. He will come back on Friday. 9. We shall meet our friends tomorrow.

EXECISE 2

Раскройте скобки, употребляя глаголы в Future Indefinite.

1. I (to think) about this information. 2. According to the forecast it (to be) raining tomorrow. 3. We (to come) to see you on Monday. 4. I (to prepare) to my

examinations next week. 5. You (to show) me your new picture? 6. I think he (not to come) tomorrow. 7. I don't think she (to answer) all the questions. 8. We (to work) in our garden tomorrow. 9. How you (to pack) your things? 10. Her mother (to buy) her a silver chain for her birthday.

Past Indefinite

Утвердительная форма	Вопросительная форма	Отрицательная форма
I walked	Did I walk?	I did not (didn't) walk
He walked	Did he walk?	He did not (didn't) walk
She walked	Did she walk?	She did not (didn't) walk
It walked	Did it walk?	It did not (didn't) walk
We walked	Did we walk?	We did not (didn't) walk
You walked	Did you walk?	You did not (didn't) walk
They walked	Did they walk?	They did not (didn't) walk

Типичные обстоятельства для Past Indefinite: last week, last month, last year, yesterday, the day before yesterday, in 1987 (прошедшая дата). Past Indefinite выражает действие, которое произошло в прошлом.

EXECISE 1

Поставьте предложения в вопросительную и отрицательную форму.

1. She worked at the library last year. 2. He spent his winter vacation in Moscow. 3. She brought me three magazines yesterday. 4. My sister studied French at school. 5. My pupils asked me a lot of questions at the last lesson. 6. My mother bought a new suit last week. 7. My father left for St. Petersburg yesterday. 8. He got up at ten o'clock yesterday. 9. My uncle taught me to swim in my childhood.

EXECISE 2

Поставьте предложение в Past Indefinite.

1. I understand the article well. 2. I listen to this music. 3. I find many good stories in this book. 4. The students spend much time in the library. 5. She makes many mistakes in her test. 6. They read many English books.

EXECISE 3

Раскройте скобки, употребляя глаголы в Past Indefinite.

1. She (to make) tea for her guests. 2. We (to know) everything about that event. 3. He (to think) much about this problem. 4. I (to be) wrong and apologized to him. 5. He (not to realize) his mistakes. 6. When you (to speak) to him? — I (to speak) to him only yesterday. 7. She (not to get) letters from her son last month. 8. He (to go) to the airport to meet his brother. 9. What you (to do) yesterday evening? — Nothing in particular. We (to watch) TV and (to look) through newspapers.

EXECISE 4

Раскройте скобки, употребляя глаголы в Past Indefinite.

In 1972 the magnificent Indian tiger (to be) close to extinction. As always, people (to be) the cause of this: hunters who (to kill) the tigers for their valuable skin or 'for sport', and farmers who (to destroy) the tiger's natural habitat. The number of tigers in India which had been 40,000 in 1900, (to go) down to 2,000 in 1972.

In 1973 The World Wide Fund for Nature and the Indian government (to set up) Operation Tiger to save this creature. They (to close) nine places where tigers could breed in safety and (to create) special reserves there. The first (to be) at Ranthambhore, an area which (to have) only fourteen tigers left.

The government (to close) down twelve villages and (to move) the 1,000 people that had lived there from the area. But they (to be)not forgotten and the government (to provide) new temples, schools and fresh water supplies.

GRAMMAR REVISION

ВРЕМЕНА ГРУППЫ CONTINUOUS

Present Continuous

Утвердительная форма	Отрицательная форма	Вопросительная форма
I am reading	I am not reading	Am I reading?
He is reading	He is not (isn't) reading	Is he reading?
She is reading	She is not (isn't) reading	Is she reading?
It is reading	It is not (isn't) reading	Is it reading?
We are reading	We are not (aren't) reading	Are we reading?
You are reading	You are not (aren't) reading	Are you reading?
They are reading	They are not (aren't) reading	Are they reading?

Типичное обстоятельство для Present Continuous - now. Present Continuous выражает действие, происходящее в настоящий момент времени. Отсюда его название – настоящее продолженное.

EXECISE 1

Поставьте предложения в вопросительную и отрицательную форму.

1. My sister is playing the piano now. 2. The teacher is explaining the rule. 3. We are learning the new words. 4. Ann is standing at the window. 5. We are going to the park. 6. John is taking a piece of chalk and writing a sentence on the blackboard. 7. I am doing my homework. 8. Jane is speaking on the telephone. 9. She is cooking supper.

EXECISE 2

Раскройте скобки, употребляя глаголы в Present Continuous.

1. She (to read) magazines. 2. He (to work) hard at his French. 3. Mr. White (not to give) a lecture. 4. He (to write) a letter to his brother. 5. I (to prepare) for the test. 6. They (to work) at this factory. 7. She (to sit) in an arm-chair and (to watch) TV. 8. I (to have) supper with my friends. 9. Her brother (not

to go) to school. 10. He (to stand) at the table. 11. They (to swim) in the river. 12. What you (to do)?

Past Continuous

Утвердительная форма	Отрицательная форма	Вопросительная форма
I was reading	I was not (wasn't) reading	Was I reading?
He was reading	He was not (wasn't) reading	Was he reading?
She was reading	She was not (wasn't) reading	Was she reading?
It was reading	It was not (wasn't) reading	Was It reading?
We were reading	We were not (weren't) reading	Were we reading?
You were reading	You were not (weren't) reading	Were you reading?
They were reading	They were not (weren't) reading	Were they reading?

Past Continuous выражает действие, которое совершилось в момент времени в прошлом (at 6 o'clock yesterday) или в определённый период времени в прошлом (from 5 till 8 o'clock yesterday).

EXECISE 1

Раскройте скобки, употребляя глаголы в Past Indefinite или Past Continuous.

1. I (to go) to the institute yesterday when I (to see) a house on fire. 2. What you (to do) yesterday? - I (to work) in the morning and (to skate) in the afternoon. 3. They (to come) in when I (to have dinner) with my friend. 4. I (to read) the newspaper when you (to ring) me up, 5. When I (to see) him, he (to stand) in the street. 6. I not (to go) out last night, because it (to rain). 7. As my brother (to get) off the tram, he (to fall) and (to break) his leg. 8. I (to see) that Kate (to sit) at the nearest table. 9. On Sunday, when I (to come) from a walk I (to meet) a strange man. 10. When I (to awake) this morning it (to be) so late that the sun (to shine) high in the sky. 11. She (to see) Henry, who (to look) at the picture. 12. He not (to see) me, as he (to read) a book when I (to come) into the room. 13. The ship (to start) at once, because the wind then (to blow) in the right direction. 14. She (to live) with her brother in the South when she (to meet) Ann.

Future Continuous

Утвердительная форма	Отрицательная форма	Вопросительная форма
I will be reading	I will not (won't) be reading	Will I be reading?
He will be reading	He will not (won't) be reading	Will he be reading?
She will be reading	She will not (won't) be reading	Will she be reading?
It will be reading	It will not (won't) be reading	Will it be reading?
We will be reading	We will not (won't) be reading	Will we be reading?
You will be reading	You will not (won't) be reading	Will you be reading?
They will be reading	They will not (won't) be reading	Will they be reading?

Future Continuous выражает действие, которое будет происходить в определенный момент в будущем (at 5 o'clock tomorrow) или в определенный период времени в будущем (from 2 till 5 o'clock tomorrow).

EXECISE 1

Раскройте скобки, употребляя глаголы в Future Continuous:

1. He (not to wait) for us at 6 o'clock tomorrow. 2. I (to translate) this article, when my mother come. 3. The conference (to take place) from 2 till 6 o'clock on Monday. 4. How long you (to stay) at your parents? 5. At this time tomorrow I (to take) my examination. 6. I (not to work) at the library from 3 till 4 o'clock tomorrow.

EXECISE 2

Раскройте скобки, употребляя глаголы в Future Indefinite и Future Continuous:

1. Don't ring him up at 11 o'clock tomorrow. He (to work) at that moment. 2. At this time tomorrow my brothers (to play) football. 3. Maybe we (to play) football tomorrow. 4. They (to come) soon. 5. I am afraid it (to rain) all day tomorrow. 6. When the train (to come) my parents (to wait) for me at the station. 7. I (to finish) this book very soon; I (to read) it all day tomorrow. 8. I must tell John that Nick (to wait) for him at ten o'clock tomorrow. 9. He (to be) busy tomorrow. He (to put) electric light in our country-house. 10. What you (to do) all day tomorrow? 11. I (to listen) to the radio

till you come back. 12. Don't come tomorrow, I (to write) my report. 13. This time tomorrow, I (to leave) Moscow for Tula.

GRAMMER REVISION

ВРЕМЕНА ГРУППЫ PERFECT

Present Perfect

Утвердительная форма	Отрицательная форма	Вопросительная форма
I have broken	I have not (haven't) broken	Have I broken?
You have broken	You have not (haven't) broken	Have you broken?
She has broken	She has not (hasn't) broken	Has she broken?
He has broken	He has not (hasn't) broken	Has he broken?
It has broken	It has not (hasn't) broken	Has it broken?
We have broken	We have not (haven't) broken	Have we broken?
You have broken	You have not (haven't) broken	Have you broken?
They have broken	They have not (haven't) broken	Have they broken?

Типичные обстоятельства для Present Perfect: already, just, yet, not yet, ever, never.

EXECISE 1

Раскройте скобки, употребляя глаголы в Present Perfect.

I.I (be) to Paris.
2. I think the director (leave) the town.
3. We (know) her since she arrived to our city.
4. I (forget) your name.
5. He (close) the door?
6. He (do) it since we left him.
7 . They (leave) Moscow this month?
8. He (not bring) a lot of French papers.
9. I (get) a long letter from father this week.
10. She just (say) she will speak to you in a minute.
11. This order (lead) to many misunderstandings.

12. He (write) his name on my book.

EXECISE 2

Раскройте скобки, употребляя глаголы в Present Perfect или Past Indefinite.1. I (meet) two of my friends today. I (meet) them on my way to school. 2. A month ago my uncle (build) a new house in the country. We (visit) it recently and (enjoy) ourselves very much. 3. He (forget) to close the window when he (leave) the house. 4. He (write) several letters this week'. 5. Where Helen (go)? I don't see her here. - She (go) home an hour ago. 6.When the concert (to begin)? 7. I don't think never (to see) such a beautiful garden as this one. 8. Jack London (to be born) in San Fransisco in an extremely poor family. 9.You (to read)many books by Jack London? 10. How careless you are! You (to break) your mother's favorite cup.

EXECISE 3

Раскройте скобки, употребляя глаголы в Present Perfect или Past Indefinite.

1. I never (to hear) this story from my father. 2. He (to be) a reader of this magazine for years. 3. She (to be) ill last week. 4. I cannot tell you whether I like this book, as I not (to read) it. 5. My mother not (to come) home yet. 6. I (to be) there last year. 7. When you last (to see) him? 8. I cannot give you this book as I (to give) it to Ann. When you (to give) it to her? 9. The child (to be) quite all right for the last two weeks. 10. It is cold today. The weather (to change) since yesterday. 11. You ever (to visit) this picture gallery? 12. I (to lose) my textbook and cannot remember when I last (to see) it.

Past Perfect

Утвердительная форма	Отрицательная форма	Вопросительная форма
I had broken	I had not (hadn’t) broken	Had I broken?
You had broken	You had not (hadn’t) broken	Had you broken?
She had broken	She had not (hadn’t) broken	Had she broken?
He had broken	He had not (hadn’t) broken	Had he broken?
It had broken	It had not (hadn’t) broken	Had it broken?
We had broken	We had not (hadn’t) broken	Had we broken?
You had broken	You had not (hadn’t) broken	Had you broken?
They had broken	They had not (hadn’t) broken	Had they broken?

Past Perfect выражает действие, которое совершилось раньше другого действия в прошлом или к определённому моменту в прошлом. Отсюда его название – “прошедшее законченное”.

1. Момент прошедшего времени выражается обстоятельством времени с предлогом by , часто в сочетании с наречием already.

2. Момент прошедшего времени выражается другим прошедшим действием в Past Indefinite в придаточном предложении времени.

EXECISE 1

Переведите на русский язык:

1. We had already built this plant by the end of 1997. 2. I had already written my exercise by half past six. 3. At nine o'clock he had already left. 4. I has written my exercise before he came. 5. They had returned home long before I rang them up.

EXECISE 2

Дополните предложения для обоснования использования Past Perfect Tense.

ОБРАЗЕЦ: We had lived here for six years.

Then we moved to Bruges.

1. I had worked at this ministry for two years. 2. He had eaten his breakfast. 3. Tom had been a student for 5 years. 4. The dog had eaten the meat. 5. Nick had told the whole story. 6. Tom had done his lessons. 7. He had called the managers. 8.He had bought a new briefcase. 9. He had chopped the firewood. 10. He had got a job offer.

EXECISE 3

Раскройте скобки, употребляя глаголы в Past Indefinite и Past Perfect.

1. He (to study) better than his father (to do). 2. They (to spend) their vacation last year at the same village where they (to live) many years ago. 3. When we (to come) she already (to send) the children away and (to be free) to speak to us. 4. Yesterday I (to buy) a new watch as I (to lose) my old one. 5. He (to take) the boy to the door by which he himself (to enter) the room. 6. He (to open) his eyes (to look) around and (think) for some time, trying to remember what (to happen) to him. 7. After they traveled in the Caucasus they (to decide) to make a sea voyage. 8.They (to see) at once that the man (to travel) a lot. 9. He could go to the seaside in June because he (to pass) all his examination. 10. He (to eat) all the cakes after it (to tell) him not to do it. 11. The day after the party he (to ask) why we (to leave) so early. 12. After they (to go) at last I (to go) to bed.

Future Perfect Tense

Утвердительная форма	Отрицательная форма	Вопросительная форма
I will have broken	I will not (won't) have broken	Will I have broken?
You will have broken	You will not (won't) have broken	Will you have broken?
She will have broken	She will not (won't) have broken	Will she have broken?
He will have broken	He will not (won't) have broken	Will he have broken?
It will have broken	It will not (won't) have broken	Will it have broken?
We will have broken	We will not (won't) have broken	Will we have broken?
You will have broken	You will not (won't) have broken	Will you have broken?
They will have broken	They will not (won't) have broken	Will they have broken?

Future Perfect Tense выражает действие, которое уже закончится ранее определенного момента будущего времени; переводится на русский язык будущим временем совершенного вида обычно в сочетании с такими наречиями, как already, before, after, предлогом by.

EXECISE 1

Перевести на русский язык:

1. Will we have come home by 5 o'clock? 2. We shall have erected this dam by 2002. 3. In three years' time I shall have taken my degree. 4. John will not1 have come home by 5 o'clock? 2 We shall have erected this dam by 2002. 3. In three years' time I shall have taken my degree. 4. John will not have signed the contract before we come. 5. Will you have repaired the watch by Friday? 6. John will have examined the car well before he buys it.

EXECISE 2

Раскройте скобки, употребляя глаголы в FUture Perfect.

1. By next winter he (to sold) all his things. 2. He (to leave) when you arrive. 3.By next month he (to write) his fourth play. 4. We (to solve) this difficult problem by the end of the week. 5. The wind (to drop) by then? 6. When the sun sets I (to read) this book. 7. If you come at nine they (to have) dinner. 8. If you ring me just after nine o'clock, I (to speak) to the doctor. 9. We (to travel) twenty miles more before we cross the frontier. 10. Next year we (to be) together for ten years.

GRAMMAR REVISION

PASSIVE FORMS

	ACTIVE FORMS	PASSIVE FORMS
Present Indefinite	It takes	It is taken
Past Indefinite	It received	It was received
Future Indefinite	It will receive	It will be received
Present Continuous	It is listening	It is being received
Past Continuous	It was reading	It was being received
Future Continuous	It will be writing	-
Present Perfect	It has received	It has been received
Past Perfect	It had received	It had been received
Future Perfect	It will have received	It will have been received

EXECISE 1

Раскройте скобки, употребляя глаголы в Present, Past и Future Indefinite Passive.

1. Moscow (to mention) first in 1147. 2. Football (to play) in summer. 3. Her new article (to finish) next year. 4. The letter (to receive) tomorrow. 5. That bone (to give) to her dog today.

EXECISE 2

Раскройте скобки, употребляя глаголы в Future Indefinite Passive.

1. This program (to broadcast) again tomorrow night. 2. Your room (to clean) tomorrow. 3. I (to introduce) to the director soon. 4. The gates (to paint) again next year. 5. My pets (not to feed) until six o'clock tomorrow. 6. This fence (not to paint) again until next year.

EXECISE 3

Раскройте скобки, употребляя глаголы в Past Indefinite Passive.

1. The best machine (to choose) at the last show. 2. My bike (to steal) last week. 3. The police (to tell). 4. The book (to finish) yesterday.

EXECISE 4

Раскройте скобки, употребляя требуемую форму пассива.

1. He (to elect) as Secretary of the Club. 2. John (to ask) to bring his gramophone to the party. 3. The library never (to close) before nine o'clock. 4. This newspaper (to print) every day for twenty years. 5. Tom and Bill (not to invite) to the party yet. 6. This program not always (to broadcast) at eight o'clock. 7. You (not to introduce) to Mr. Brown yet. 8. The new gates (not to install) yet. 9. How long this program (to broadcast) at six o'clock. 10. Why the gates of the park (to close) so early? 11. This newspaper (to publish) every day for twenty years. 12. Why Bill and Mary (not to invite) to Anne's party? 13. Tom (not to ask) to bring his records to the party also. 14. Why Henk (not to introduce) to Mr. Brown? 15. The gates (to close) very early, haven't they? 16. This plan (to recommend) by the Committee, hasn't it?

EXECISE 5

Составьте предложения, используя пассивную форму глагола, и закончите текст.

Pollution from as far away as Mexico is damaging the Arctic and many of the animals that live there are in danger. Poisonous gases and CFCs are produced by industrial countries.

Toxic metals……..

- Poisonous gases and CFCs/produce/industrial countries
- Toxic metals/dump/in the sea/industries
- The poisonous gases and the CFCs/blow/northwards/the wind

- The gases/deposit/in the Arctic/snow
- The ozone layer over the Arctic /destroy/the CFCs
- More of the sun radiation/let in/the ozone layer
- Animals. Immune systems/damage/the sun's radiation
- The toxic metals in the sea/carry/northwards/ocean currents
- They/eat/fish
- Polar bears, seals and other animals/poison/the fish that they eat

GRAMMAR REVISION

MODAL VERBS

Модальные глаголы и их эквиваленты	
Долженствование	Must, should, to have to, to be to
Физическая возможность	Can, could, to be able to
Разрешение	May, might, to be allowed to

Модальные глаголы обозначают не само действие, а указывают на отношение к нему говорящего. Модальные глаголы выражают способность, возможность, вероятность действия, обозначенного последующим инфинитивом.

Отличительные признаки модальных глаголов:

1. Не имеют неличных форм – инфинитива, причастия, герундия.
2. Не изменяются по лицам и числам.
3. Образуют вопросительную и отрицательную форму без участия вспомогательных глаголов.

EXECISE 1

Вставьте can или can't.

1. Ann …speak French but she …speak Russian.
2. Mrs. White …draw but she …draw well.
3. I visit you but I …visit you last week.

4. I…do it for you, but I …do it now.
5. You…go to the park but you …go now. It's snowing hard.
6. Mr. Brown …sing but he …sing well.

EXECISE 2

Переведите на русский язык.

1. May I try on your hat? 2. Children may not play with matches. 3. May I have a smoke here? 4. May I open the window? 5. You may look through the words, then we'll have dictation. 6. You may listen to music but not very loudly.

EXECISE 3

Переведите на русский язык.

1. You must answer this letter today. 2. We must know all the details of this problem. 3. The furniture is really beautiful, but it must be very expensive. 4. Here are all the documents that you must type. 5. Must I send this telegram today?

EXECISE 4

Переведите на английский язык употребляя to be able to.

1. Я надеюсь, что смогу сделать это сам. 2. Она сможет сделать отдать тебе книгу через две недели. 3. Он не смог встретить нас вчера. 4. Я смогу поговорить с ней только завтра. 5. Он не сможет тебе помочь в таком сложном деле. 6. Ты не сможешь написать доклад к понедельнику?

EXECISE 5

Вставьте подходящие формы глаголов to have или to be.

1. I have no time to speak to you now, I …to hurry home. 2. You …to disturb him. 3. The letter will …found. 4. She …be very careful. 5. Now I …to go away. 6. Then the day came when I …go back to my work. 7. The train … leave at midnight. 8. If you don't go at once you …to take a taxi to catch your train.

EXECISE 6

Откройте скобки и поставьте нужные формы глаголов *can, may, must* или обороты, их заменяющие:

1. He said that it was time to leave as he (must) be at the station in time.
2. I (cannot) see you tomorrow, as I shall not come to the institute.
3. I told them that they (cannot) leave London so soon.
4. He asked for information and was told that he (must) walk back for half a mile.
5. I (must) go to my office yesterday, though it was my day off.
6. I (must) go to my office tomorrow, though it will be may day off.
7. I (cannot) leave London before finish my work.
8. I (can) do it without this book if you give me your notes.

EXECISE 7

Составьте предложения со словами из таблицы.

CAN BE OR NOT CAN BE RECYCLED

ALUMINUM	Cans, foil, doors, window, frames	
GLASS	Glasses, jars, road filling	
RUBBER	Tires, auto hoses, carpet padding	
METAL	Cans, steel piping, sewer lids	
CLOTH	Roofing, carpets, blankets, padding, paper	
NEWSPAPER	Boxes, towels, stationary	
PLASTICS	Toys, mulch, packing, garbage bags	

GRAMMAR REVISION

CONDITIONAL FORMS

1ST CONDITIONAL (относиться к будущему времени, реально возможно)				
IF If	… I	V use recycled products	… I	will V will help to save nature.
2ND CONDITIONAL (относиться к настоящему или будущему временам, нереально и маловероятно)				
IF If	… the mankind	Ved recycled every product	… we	would V would save more energy and raw materials
3D CONDITIONAL (относиться к прошлому времени, неосуществимо, сожаления о прошлом)				
IF if	… we	had Ved hadn't used CFCs	… we	would have V we wouldn't have ozone hole today.

EXECISE 1

Составьте предложения в Conditional 1. Данные предложения являются предсказаниями о будущей судьбе некоего вымышленного острова Таку.

1	If they build an airport in the marshes,	A	the climate will change
2	What will happen to the island	B	they will pollute the sea
3	If they build a port,	C	many species of birds will disappear.
4	If thousands of people come to the island,	D	if they do that ?
5	If they destroy the rainforests,	E	the Taku language disappear.

EXECISE 2

Раскройте скобки, используя соответствующее время глаголов.

1. If it (to rain) we'll stay at home. 2. I'd go to the dentist if I (to be) you. 3. If He (to be) come, tell him that we were in a hurry. 4. If we (to know) that before we would not have come. 5. I would go at once if he (to) say) that. 6. If you (to read) the book you would know the answer. 7. If I (to know) I would tell you. 8. I think you would have got permission if you (to ask) me.

EXECISE 3

Раскройте скобки, используя соответствующее время глаголов.

1. If he (to be) here, he would give us money. 2. If I had come yesterday, I (to bring) your book. 3. If she hadn't been ill last week, she (to take an examination). 4. If he (to come) in time, he would visit us. 5. If we had more money, we (to buy) this cupboard. 6. If John returned, she (to forgive) him everything. 7. If they (to stay) at home, they would watch TV and they would see this film. 8. If she go on leave, she (to do) this work.

EXECISE 4

Переведите предложения на русский язык. Изменив форму глаголов, запишите эти предложения в Conditional 2 и 3.

1. If you come I shall give you this book. 2. If you see him, tell him to come here. 3. He will speak to you if you don't come out. 4. If I come home in time, I shall begin to work. 5. If the weather permits, the ship will start tomorrow.

EXECISE 5

Переведите предложения на русский язык.

1. If you don't try to hide anything, you will nothing to fear. 2. If you tell the truth, people trust you. 3. If you play tennis tomorrow, we won't be able to have our usual work. 4. If you have read this report by next Friday, you will be able to discuss it at our meeting afternoon.

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