Министерство образования и науки РФ

Федеральное государственное бюджетное образовательное учреждение
высшего профессионального образования
**«Тверской государственный технический университет»**
(ТвГТУ)

В.В. Сизова, О.Г. Шилова

# TECHNOSPHERE SAFETY

Учебное пособие

Тверь 2014

УДК 811.111(075. 8)
ББК 81.2. Англ.я7

Рецензенты: зав. кафедрой иностранных языков гуманитарных факультетов Тверского государственного университета, д. ф. н., профессор Комина Н.А.; зав. кафедрой «Безопасность жизнедеятельности и экология» ТвГТУ, к. т. н., доцент Пузырев Н.М.

Сизова, В.В. Technosphere Safety: учеб. пособие / В.В. Сизова, О.Г. Шилова. Тверь: Тверской государственный технический университет, 2014. 96 с.

Предназначено для студентов, обучающихся по направлению подготовки бакалавров «Техносферная безопасность» (280700), а также круга людей, интересующихся вопросами в данной сфере.

Ставит целью обучить студентов читать литературу по специальности и осуществлять коммуникацию на профессиональные темы.



ISBN 978-5-7995-0724-4

# СТРУКТУРА ПОСОБИЯ

Пособие составлено в соответствии с программными требованиями ФГОС ВПО и учебным планом по разделу дисциплины «Английский язык для специальных целей» в Тверском государственном техническом университете.

Ставит своей целью развитие навыков поискового и просмотрового чтения по данной тематике, реферирования текстов, а также накопления словарного запаса, необходимого для чтения специализированных текстов и осуществления коммуникации на профессиональные темы.

Состоит из восьми разделов и построено по тематическому принципу. Охватывает темы:

человек, наука, производство и охрана труда;
техника безопасности на производстве;
техника безопасности в чрезвычайных ситуациях;
противопожарная безопасность;
экологическая безопасность,
а также раздел с дополнительными текстами для самостоятельной практики перевода и глоссарий к ним.

Тематические разделы включают вокабуляр с транскрипцией, предтекстовые упражнения, вводно-описательные тексты, взятые из аутентичных источников, систему упражнений к основным и дополнительным текстам с выходом в монологические высказывания «Мой родной город», «Известный ученый», «Моя будущая профессия», задания на закрепление ранее изученных грамматических явлений, с которыми часто приходится сталкиваться при чтении литературы по специальности. Кроме того, пособие содержит пример составления письма-запроса и резюме при оформлении на работу по специальности в зарубежную компанию и примерный план собеседования-интервью при приеме на работу.

Содержит задания и итоговый тест для подготовки к сдаче федерального интернет-экзамена в сфере профессионального образования.

Вокабуляр состоит из активных слов с транскрипцией по алфавиту. Упражнения нацелены на предтекстовую и послетекстовую подготовку. Основная цель упражнений – закрепление лексики базовых разделов и грамматического материала, пройденного на ранних этапах; развитие навыков перевода и понимания прочитанного, устной речи (диалогическая и монологическая речь), аннотирования и реферирования.

# UNIT I. MAN, SCIENCE, ENGINEERING AND OCCUPATIONAL SAFETY

*Study the Vocabulary*

aeronautic(al) [ˌeərə'nɔːtɪk((ə)l)] *a* авиационный
attractive [ə'træktɪv] *a* привлекательный
branch [brɑːntʃ] *n* отрасль
broad [brɔːd] *a* широкий
by means of [baɪ miːnz əv] при помощи, посредством
chain [tʃeɪn] *n* цепь, цепочка
civil engineering ['sɪv(ə)lˌɛndʒɪ'nɪərɪŋ] гражданское строительство
common ['kɒmən] *a* общий
communicate smth. [kə'mjuːnɪkeɪt] *v* сообщать о чем-то
complicate ['kɒmplɪˌkeɪt] *v* затруднять
computer-aided engineering [kəm'pjuːtə'eɪdɪdˌɛndʒɪ'nɪərɪŋ] автоматизированное конструирование
conceive [kən'siːv] *v* постигать, понимать
condition [kən'dɪʃən] *n* условие
create [kriː'eɪt] *v* создавать
dangerous ['deɪndʒərəs] *a* опасный
data ['deɪtəˌ 'dɑːtə] *n* данные мн.ч.
define [dɪ'faɪn] *v* определять; definition [ˌdɛfɪ'nɪʃən] *n* определение
design [dɪ'zaɪn] *v* проектировать, конструировать, планировать
develop [dɪ'vɛləp] *v* развивать, разрабатывать
divide [dɪ'vaɪd] *v* делить, разделять
electrical engineering [ɪ'lɛktrɪk(ə)l ˌɛndʒɪ'nɪərɪŋ] электромашиностроение, проектирование электрических устройств
encompass [ɪn'kʌmpəs ], [en-] *v* заключать, охватывать
environmental [ɪnˌvaɪər(ə)n'ment(ə)l],[en-] *a* относящийся к окружающей среде
evaluate [ɪ'væljueɪt] *v* оценивать
expensive [ɪk'spen(t)sɪv ], [ek-] *a* дорогостоящий
generation [ˌdʒɛnə'reɪʃən] *n* образование, генерация
imaginable [ɪ'mædʒɪnəbl] *a* вообразимый
imperative [ɪm'pɛrətɪv] *a* крайне важный
improve [ɪm'pruːv] *v* улучшать
independent [ˌɪndɪ'pɛndənt] *a* независимый
keep track [kiːp træk] *v* отслеживать
labour ['leɪbə] *n* труд
maintain [meɪn'teɪn] *v* поддерживать, сохранять (в хорошем состоянии)
mean [miːn] *v* значить
mechanical engineering [mɪ'kænɪk(ə)l ˌɛndʒɪ'nɪərɪŋ] машиностроение

microfabricated device ['maɪkrəu 'fæbrɪkeɪt dɪ'vaɪs] устройство, изготовленное микротехнологическими методами
mining ['maɪnɪŋ] g горное дело
natural ['nætʃrəl¸ -tʃərəl] *a* природный
no longer [nəu 'lɒŋə] больше не
occupational safety [¸ɔkju'peɪʃ(ə)n(ə)l 'seɪftɪ] охрана труда
power ['paʊə] *n* мощность, энергия
price [praɪs] *n* цена
property ['prɒpətɪ] *n* свойство
range [reɪndʒ] *n* ряд
reasonable ['ri:zənəb(ə)l] *a* разумный, обоснованный
reliable [rɪ'laɪəb(ə)l] *a* надежный
replace [rɪ'pleɪs] *v* замещать
responsible [rɪ'spɒnsəb(ə)l] *a* ответственный
safe [seɪf] *a* безопасный
satellite ['sæt(ə)laɪt] *n* спутник
science ['saɪəns] *n* наука; scientific ['saiən'tɪfik] *a* научный
solution [sə'lu:ʃən] *n* решение
solve [sɔlv] *v* решать
stand out v выделяться, выступать
steam [sti:m] *n* пар
take into account [teɪk 'ɪntu: ə'kaunt] принимать в расчет
term [tɜ:m] *n* термин
transmit [trænz'mɪt] *v* передавать, посылать
universal [¸ju:nɪ'vɜ:s(ə)l] *a* всеобщий
utilization [¸ju:tɪlaɪ'zeɪʃ(ə)n] *n* использование
virtual ['vɜ:ʧuəl] *a* возможный
wiring ['waɪərɪŋ] *n* прокладывание электрических проводов

Pre-text exercises

Ex. 1. Mind the rules of pronunciation.
[ai]: price, define, mining, device, divide, time, type, combine, library, alive;
[ei]: radio, range, dangerous, behave, safe, take, generation, telecommunication;
[ju:]: human, computer, communicate, mutual, tube, produce, use;
[əu]: social, process, whole, growth, location, so, enclose, focus, remote;
[i:] these, scene, extremely, complete, equal, recent, delete, theme, machine, be.

[ʌ]: structure, destruction, industrial, number, result, conduct, introduction;
[i]: discipline, within, disc, thing, different, system, bridge, his, condition;
[e]: intellectual, sense, electrical, testing, expensive, next, extent, chemical;
[æ]: aspect, transform, imaginable, practical, that, pad, Maths, man, cannot;
[o]: responsible, economic, problem, following, methodical, robotics, solve.

Ex. 2. Use suffixes
to form adjectives, adverbs, and nouns:
-*er:* small, fast, large, broad, free, slow, soon, nice, great, late, simple, few;
-*er:* to play, to compute, to build, to manufacture, to produce, to design, to test;
-*ly:* virtual, practical, dangerous, reasonable, mechanical, social, general, nice;
*al:* person, globe, form, incident, accident, practice, comic, industry, function.

to form gerunds and participles:
-*ing:* to conceive, to produce, to define, to test, to evaluate, to design, to mine;
-*ed:* design, develop, create, repeat, divide, specialize, improve, reach, call.

Ex. 3. Make a list of your own words to describe engineering before reading the text.

TEXT 1. ***What is Engineering?***

Take a look around you. Virtually everything within your arms reach – your portable disc player, television, your automobile and computer, the building you are in, the movie you are watching – were designed, developed, or created by means of engineering. It's everywhere.

Engineers from a variety of disciplines – electrical, civil, industrial, chemical, manufacturing, computer and more – are responsible for conceiving and producing just about every product imaginable. For example, if a manufacturer wants a faster car, a smaller or larger personal touchpad, etc., he asks a design engineer to find practical solution.

Engineers use theory to produce practical solutions. It is to be of a reasonable price, safe, and reliable. A new idea cannot be too expensive, dangerous or unreliable. Usually engineers solve problems in a following methodical way:

- defining a problem
- designing a solution
- testing a solution
- evaluating a solution.

If the solution is not right, the process is repeated. When a good solution is found the next stage is to communicate a solution.

There are lots of different types of engineering. The only thing they have in common is that all of them use Maths and Science to improve industries and manufacturing. The science of engineering can be generally divided into three main fields:

– civil engineering (buildings, roads, etc.)

– mechanical engineering (machines, machine-tools)

– electrical engineering (electricity, lighting, etc.).

Each of these tree main fields can be divided into special areas. For example, civil engineering covers mining, bridge building, environmental engineering; transportation engineering , materials engineering, etc.; mechanical engineering covers aeronautical, automobile, robotics, and machine engineering, computer-aided engineering, etc.; electrical engineering covers power generation, wiring, telecommunications, control systems, radio engineering, etc.

So, what is engineering? It is an application of scientific, economic, social, and practical knowledge in order to design, build, maintain, and improve structures, machines, devices, systems, materials and processes. The discipline of engineering is extremely broad and encompasses a wide range of more specialized fields of engineering.

Ex.1. Give English equivalents from the text:

Инженерное дело, спроектировано и разработано при помощи инженерно-технических работ, найти практическое решение, решать проблемы, формулировка проблемы, проектирование решения, апробация решения, оценка решения, надежное и безопасное решение с разумной ценой, гражданское строительство, проектирование механического оборудования, электрическая инженерия, применение знаний, совершенствовать отрасли промышленности и производство, горное дело, технические средства и методы охраны окружающей среды, проектирование транспортных средств, строительство мостов, технология производства материалов, машиностроение, производство электроэнергии, роботостроение, сообщить о решении.

Ex. 2. Fill in the blanks with the active vocabulary:

| engineering, by means of, civil engineering, mechanical engineering, electrical engineering, evaluated, define, develop, designed, communicated, solved |
|---|

1. Working clothes are … for doing work in, and are intended to be practical rather than attractive.
2. … is the designing, constructing, and maintenance of electrical devices.
3. If you … an idea, theory, story or theme, it gradually becomes more detailed, advanced, or complex.
4. The problem cannot be easily … . It is very complex.

5. There are always many possible ways to … a specific research problem; the way the researcher formulates the problem is a key part of how a research project is … .
6. … the branch of science and technology concerned with the design, building, maintenance, and use of engines, machines, and structures.
7. … is the planning, design, and building of roads, bridges, harbours, and public buildings.
8. … the branch of engineering dealing with the design, construction, and use of different types of machines.
9. He … everything to his boss just after he heard the good news.
10. Information is transferred … an electrical impulse.

Ex. 3. Read the text again and say if the sentences below are true, false, or there is no information of this fact in the text:

1. Lots of things are made by engineers.
2. Engineering is both theoretical and practical.
3. Only engineers can solve problems.
4. Science is a systematic study of nature and behaviour of the material and physical universe, based on observation, experiment, and measurement, and the formulation of laws to describe the facts in general terms.
5. The work of engineers may be outdoor and indoor.

Ex. 4. What is engineering? Give your own definition of the term.

TEXT 2. ***Man, Science and Manufacture***

The first Industrial Revolution took place in the late 1760s. It was a revolution resulting from the introduction of a new form of power – steam power. The first industrial revolution gave us machines to replace hand-labour. The second Industrial Revolution of the XX century was much more complicated than the earlier one. The Second Industrial Revolution has produced machines that can do the work of man's brains. It is called an electro-technical revolution, the period of change in power base of world production. Inventions of the Second Industrial Revolution are electric generator, transformer, car, telephone, telecommunication, etc.

Now man-made satellites reach the distance planets and transmit back to the Earth the data about outer space over hundreds of millions of miles. People have learned how to live and work in near space and are preparing for the day when interplanetary travels become usual. We are entering the period of the Third Technological Revolution, the age of miniprocessors and microfabricated devices.

The population of the Earth is growing rapidly. The utilization of natural resources is growing. Various types of human activity are becoming more and more independent of environmental conditions. All this does not mean that environmental factors and conditions no longer have an effect on our activities. Quite the contrary, the more independent of the environment our actions become, the more fully must we take into account its properties and conditions. Technical progress has made it imperative. Man, Science, and Manufacture are interconnected.

New sources of power, new processes and new materials have come into use with such a high speed that it is hard to keep track of them all. You can only look around your house to get some idea of the speed of change. How many things can you find there that could not have been in your grandfather's boyhood?

Sometimes we call the times we live in the age of steel, or the electronic age, or the atomic age, or space age, but what stands out most of all – it is an age of change. Each of us is a link in the chain of universal human progress. But can this chain lead to the progress alone?

Ex. 1. Answer the questions on the text.

1. When did the first Industrial Revolution take place?
2. What was its symbol?
2. Was the second Industrial Revolution more complicated than the first one?
3. What kind of machines has it produced?
4. How does a man influence nature?
5. Why do we call the times we live in an age of change?
6. Does the Third Technological Revolution do harm or good to a man? What is more?

Ex. 2. Match the English and Russian equivalents:

| | |
|---|---|
| 1. produce | a) влиять |
| 2. transmit | b) мировое производство |
| 3. keep track of | c) введение |
| 4. high speed | d) энергетическая база |
| 5. have an effect | e) следить за |
| 6. power base | f) век электроники |
| 7. world production | g) заменить ручной труд |
| 8. introduction | h) принимать во внимание |
| 9. universal progress | i) высокая скорость |
| 10. replace hand-labour | j) производить / создавать |
| 11. take into account | k) передавать |
| 12. electronic age | l) всеобщий прогресс |

Ex. 3. Choose the right word.
1. The … of our work were not satisfactory.
a) conditions b) situations
2. … speed of a motor car is not justified within the city.
a) high b) rapid
3. Everybody is … between the past and the future in the chain of universal human progress.
a) an atom b) a link
4. The power of thinking depends upon … .
a) body b) brain
5. The First Revolution resulted from the introduction of a new form of … .
a) force b) power
6. This is definitely something that designers are to take into … .
a) attention b) account

Ex. 4. Think of positive influences of the technological progress. Make a list of key words and explain in 3-4 sentences. What about negative effect?

Ex. 5. Translate into Russian the chains of nouns:
Human progress factors; ten year development program in atomic power industry; Moscow World Youth Industrial Forum; the NATO nuclear weapon planning working group; the Hiroshima-Nagasaki world Peace Conference; defense industry reform; the world's synoptic observation; transport safety measurers; surface-to-air missile system; information-bearing laser beam; air quality improvement; alternative energy source; the U.S. Climate Change Science Program report; chemical pollution control technology; the Third Technological Revolution influence.

## TEXT 3. ***Industrial Development of Tver***

Tver, one of the oldest Russian towns, stands on the Great Russian River Volga. It was founded in 1135. Tver was formerly the capital of a powerful medieval state and a provincial town in Imperial Russia.

In the second part of the 19th century Tver became a large industrial town. Here appeared large textile mills, a steam mill, a timber mill and a railway carriage building plant.

By the beginning of the last century, rivers and railways had played a great role in the production development of Tver province. The Nikolaev railroad contributed much to the regular supply of Tver enterprises with raw materials and necessary equipment, as well as to the manufactured products distribution.

Textile manufacture remained the main industry of Tver. In 1913 about 70 % of all Tver province workfolk worked at six largest textile mills. The second most important industry was mineral processing (production of bricks, glass, porcelain, etc.), the metal industry came third (railway carriage building works). Kuznetsov porcelain factory and the Kuvshinov writing-paper mill were the largest processing enterprises.

At that time Tver railway carriages, platforms, tankers, paper, porcelain, earthenware and crystalware, rope, forest and textile products were popular in the domestic market. Wood and cotton fabrics were even sent abroad.

Now Tver remains a big industrial center of Tver Region. There are many large enterprises of mechanical engineering, metal working, energy, and textile, chemical, polygraphical and other industries: railway carriage building plant, artificial fibre combine and artificial leather combine, excavator works, two printing and publishing works etc.

The Volga is still playing an important role in the life of our town; it supports suburban and long distance passenger-boats and serves as means of transportation of various goods.

*Vocabulary Notes:*

| | |
|---|---|
| medieval [ˌmɛdɪ'iːv(ə)l] | средневековый |
| timber mill ['tɪmbə mɪl] | лесопильный завод |
| contribute to [kən'trɪbjuːt tu] | вносить вклад (в) |
| porcelain ['pɔːs(ə)lɪn] | фарфор |
| earthenware ['ɜːθənˌwɛə] | керамика |
| rope [rəup] | канат, верёвка |
| domestic market [də'mɛstɪk 'mɑːkɪt] | внутренний рынок |
| artificial fibre [ˌɑːtɪ'fɪʃəl 'faɪbə] | искусственное волокно |
| leather ['lɛðə] | кожа |
| suburban [sə'bɜːb(ə)n] | пригородный |

Ex. 1. Check your knowledge of the town of Tver. Answer the questions:
1. Where does the town of Tver stand?
2. When was Tver founded?
3. Is Tver older than Moscow?
4. How many rivers are there in Tver? What are they?
5. Is the country around Tver picturesque?
6. What role did Tver play in the history of our country? And now?
7. Who designed the centre of the city?
8. What buildings were built by Kazakov and Nikitin?
9. How many town districts is Tver divided into nowadays? What are they?

10. What famous people lived and worked in Tver? And what about famous names of our time?
11. What large Tver enterprises do you know?
12. What is the largest library in Tver?
13. Have you ever been to any Tver theatre?
14. How many higher schools are there in Tver?
15. Is our town attractive for tourists? What places of interest do you know?

Ex. 2. Complete the dialogues.

1) – ……?

– My home town is Tver.

– ……?

– Yes, I was born in Tver and I live here all my life.

2) – ……?

– My town was founded in the twelfth century.

– What part of the town do you like most of all?

– …….?

– What are the main tourist attractions in your town?

– In my opinion, ……..

3) – Are there any green spaces in your town?

– …….

– ……...?

– Some people prefer to live in the center of the town, others – in the suburbs where life is quieter and there are more green spaces.

– ……?

– My favourite place in my town is Ulitsa Tryokhsvyatskaya.

4) – …….?

– I cannot say that public transport is good in our town, at least not everywhere. Buses are often overcrowded, especially in rush hours, and the traffic becomes more intensive from year to year. But as far as I can judge there is the same problem in every big city.

– …….?

– Usually by bus? But sometimes I get to the University by fixed-route taxi.

– …….?

– Yes, of course. I feel happy in my town. I'd like to live here all my life.

Ex. 3. Make up your own story of the town of Tver according to the plan:
1. Geographical position.
2. Historical background.
3. Industrial development
4. Cultural development and famous people of our town.
5. Educational institutions.

## TEXT 4. *Occupational Safety and Health*

Occupational safety and health (OSH) is an area concerned with protecting the safety and health of people engaged in work. The goals of occupational safety and health programs include stimulating a safe and healthy work environment. OSH may also protect co-workers, family members, employers, customers, and many other people who might be affected by the workplace environment.

Occupational safety and health can be important for moral, legal, and financial reasons. All organizations have a duty to care for employees and other people who may be affected by the company's activity remain safe. Moral obligations involve the protection of employee's lives and health. Legal reasons for OSH relate to the preventative, penalty and compensatory effects of laws that protect workers' safety and health. OSH can also reduce employee injury and illness related costs, including medical care, sick leave and disability benefit costs. OSH may involve interactions among many subject areas, including occupational medicine, occupational hygiene, public health, safety industrial engineering, health physics, ergonomics, and occupational health psychology. That is why health and safety engineer is a key person on any factory floor.

Production environment affects workers' health greatly, although each case of impact is very complex. Moreover, the production environment influence on human beings, especially today, flows against the degradation of natural environment, namely, air, drinking water and food as well as poor lifestyle, poor behaviors (alcohol abuse, smoking, drug addiction, etc.).

According to the World Health Organization, nearly 50% of all the factors that affect badly the health of population depend on a person's lifestyle; up to 20-25 % of factors depend on the state of environment (including production), up to 15-20 % of factors depend on genetic background and about 10% – on work of health care facilities.

*Vocabulary Notes:*

| | |
|---|---|
| occupational safety and health | охрана труда и техника безопасности |
| be affected by | подвергаться негативному влиянию |
| workplace environment | условия труда на рабочих местах |
| to care for | заботиться (о) |
| preventative measures | предупредительные меры |
| penalty | карательная мера, штраф |
| compensatory | компенсационный, возмещающий (ущерб, убытки) |
| sick leave | отпуск по болезни |
| disability benefit | пособие по нетрудоспособности |
| influence = impact on | влияние (на) |
| depend on | зависеть от |
| health care facilities | учреждения здравоохранения |

Ex. 1. Read the text and say if the following statements:
– true
– false
– there is no information in the text

1. Occupational safety and health have direct or indirect reference to industrial engineering.
2. Occupational safety and health have financial reasons.
3. The objectives of occupational safety and health programs are to provide the secure and healthy operation environment.
4. The required professional competence is specified in the qualifications of health and safety engineer.
5. Legal reasons for OSH relate to the moral laws to protect co-workers, family members, employers, customers, and many other people who might be affected by the workplace environment.

Ex. 2. Which part of the text (1, 2, 3, 4) does the following information correspond to?

1. Occupational safety and health programs are responsible for psychological, emotional, and financial harm done to employees.
2. The description of factors affecting the health of population
3. Occupational safety and health involve a lot of related subject fields.
4. The relations between man and nature have become one of the most important factors today.

Ex. 3. Define the main idea of the text:

– The goals of occupational safety and health programs are to stimulate the safe and healthy work environment;
– Occupational safety and health programs involve interactions among many subject areas, including occupational medicine, occupational hygiene, public health, safety industrial engineering, health physics, ergonomics, and occupational health psychology;
– Occupational safety and health is an area concerned the safety and health of people engaged in work and has a lot of impact factors.

Ex. 4. Translate into English:

Всё, что человек видит вокруг, создано посредством инженерной мысли и производства. Человек находится во взаимодействии с наукой и производством. Каждый из нас является звеном в цепи производственного прогресса человечества. Но только ли к прогрессу ведет эта цепочка?

Состояние производственной среды является важным фактором здоровья и безопасности человека. Охрана труда и техника безопасности это сферы деятельности, которые связаны с обеспечением безопасности и здоровья людей, занятых в производстве. Программы по «Охране труда и техники безопасности» защищают работодателей, работников, членов их семей и клиентов на рабочем месте и связаны с моральными, юридическими и финансовыми вопросами.

## ***Grammar Revision***

*(видовременные формы глагола, типы вопросов, модальные глаголы и их заменители)*

*1. Translate sentences. Pay attention to the tense-forms:*

1. An engineer designs buildings, machines, or other objects in detail. 2. The country is moving towards engineering progress and economic recovery. 3. Nuclear energy is derived and will be derived from the nuclear reactors. 4. In principle Man is capable of making everything that Nature has already created or is creating now. 5. Since the last century extensive development programs on occupational safety and health have been carried out in many countries and much progress has been achieved. 6. During recent years interest in nuclear power has been steadily growing in several countries. 7. A prototype is the first typical model of something from which other forms are developed or copied. 8. These terms are being insisted upon. 9. The achievements in this field will be spoken about at the conference. 10. Education begins with birth and continues until death, but it is most important in childhood.

*2. Put the verb in a proper tense:*

1. Einstein (to present) his theory of relativity in 1905. 2. Our country (to have) a great number of brilliant scientists in all fields of science. 3. We are tired. We (to walk) 10 kilometers already. 4. He already (to park) the car by the time I arrived. 5. I (to work) at the library tomorrow from 5 to 7 p.m. 6. He (to watch TV) when the phone rang. 6. In few days we (to go) to London. 7. I (to write) this exercise for about 10 minutes already. 8. When he was 12, he (to begin) his study of social sciences. 9. I just (to meet) him. He (to look) nice. 10. Russian scientists (to make) research in all fields of knowledge. 11. Someone (to knock) at the door, Ann, go and open it. 12. He (to write) a paper before he went to the scientific meeting. 13. I (to know) the results in a week. 14. Don't ring her up about 9 o'clock tomorrow, she (sleep). 15. Life (to exist) on the Earth for millions of years. 16. We do not know in what form life first (to exist). 17. I already (to compare) the data on the first and second respondent groups. 18. Considerable efforts (to make) now to solve ecological problems. 19. In the nearest future ecological factors (to include) in the indicators of an enterprise's performance.

*3. Change Active into Passive:*

1. All the scientists of the world accepted the theory.
2. They have found the reason for an industrial accident.
3. The engineer had tested several models to prove his idea.
4. She hasn't communicated our scientific discovery.
5. We study the problems first then solve them.
6. They don't require different kinds of material for the experiments.
7. She is keeping track of our doings.
8. We were working out the new design of our laboratory at that time.
9. We have not conceived of such cruelty.
10. By the end of last week they had changed their opinion.
11. The whole year round I was putting the results of the experiment into practice.

*4. Ask questions using the words in the brackets:*

1. The new lab has just been opened (where).
2. He has been operating the machine (how long).
3. I have found this procedure very helpful (who).
4. They are going to introduce a new machine (when).
5. The student gave an example of the three states of matter (why).
6. The group of young fellows will have finished a new device by next month (what).
7. They have shown the direction of primary motion (who).
8. Causes of an accident were discovered by the group of specialists (when).

*5. Translate sentences. Pay attention to modal verbs and their substitutes:*
1. Today a student has to communicate a great amount of new information. 2. They are to present their course papers at the end of a semester. 3. The firm has developed a robot that can move over territory with a garbage collection bucket. 4. Science and technology should find some more radical solutions to the problem of engineering. 5. The population of the Earth is growing rapidly and by 2020 it may exceed the seven billion mark. 6. The achievements of science must be used for better people's living conditions. 7. The environmental control specialist may attend a forestry reserve. 8. He wasn't allowed to use a dictionary while writing the test. 9. I think I'll be able to get round to this job only next month. 10. Law ought to prohibit the actions hurtful to human safety in industry. 11. I am able to conceive this postulate. 12. I could see that something was terribly wrong. 13. I was to write a report for the Work Safety Conference. 14. When we consider the role of earth science in solving problems we have to see that it can and should develop answers to all of the questions we have asked.

## UNIT II. SAFETY ENGINEERING AND MANUFACTURING

*Study the Vocabulary*

adhere [əd'hɪə] (adhere to) *v* придерживаться; соблюдать
apply [ə'plaɪ] *v* применять к (чему-л.); использовать, употреблять
assemble [ə'sembl] *v* собирать, монтировать; *n* сборка, монтаж
assess [ə'ses] *v* оценивать, давать оценку
assessment [ə'sesmənt] *n* оценка, оценивание (качества, эффективности)
attempt [ə'tempt] *v* пытаться, стараться, стремиться
barrier guard ['bærɪə gɑ:d] защитное ограждение
carcinogen [kɑ:'sɪnəʤ(ə)n] *n* канцероген, канцерогенный фактор
charcoal filter ['ʧɑ:kəul 'filtə] угольный фильтр
consequences ['kɔnsikwənsɪz] *n* последствия
dermatitis [ˌdɜ:mə'taɪtɪs] *n* воспаление кожи, дерматит
design limits [dɪ'zaɪn 'lɪmɪts] расчётные ограничения, проектные пределы
duct [dʌkt] *n* канал, труба, трубопровод
eliminate [ɪ'lɪmɪneɪt ] *v* устранять, исключать
employee [ˌɪmplɔɪ'i: ], [em] *n* служащий; работающий по найму; сотрудник
employer [ɪm'plɔɪə ], [em-] *n* наниматель, работодатель
engineered environment [ˌenʤɪ'nɪəd ɪn'vaɪər(ə)nmənt] создаваемая обстановка
engineering design [ˌenʤɪ'nɪərɪŋ dɪ'zaɪn] технические разработки
error ['erə] *n* заблуждение; оплошность, ошибка
event [ɪ'vent] *n* случай
excessive [ɪk'sesɪv], [ek-] *adj* непомерный

expose [ɪk'spəuz], [ek-] *v* подвергать
exposure [ɪk'spəuʒə], [ek-] *n* подвергание (какому-л. воздействию)
fail-safe system безаварийная система
failure ['feɪljə] *n* тех. авария, повреждение
fan [fæn] *n* вентилятор
fault [fɔ:lt] *n* дефект, ошибка, авария, неисправность, повреждение
fault-tolerant [fɔ:lt 'tɔl(ə)rənt] нечувствительный к отказам
feeding device ['fi:dɪŋ dɪ'vaɪs] загрузочное устройство; питающее устройство
flammable ['flæməbl] *adj* огнеопасный; легковоспламеняющийся
frequency ['fri:kwən(t)sɪ] *n* частота, частотность
governmental entity [ˌgʌv(ə)n'ment(ə)l 'entɪtɪ] правительственная организация
hazardous ['hæzədəs] *adj* опасный, рискованный
improper lifting [ɪm'prɔpə 'lɪftɪŋ] нарушение правил при подъеме груза; неправильный подъём
in excess of сверх, свыше (нормы)
ingest [ɪn'ʤest] *v* глотать, проглатывать
injury ['ɪnʤ(ə)rɪ] *n* вред, повреждение, порча, убыток, ущерб; *pl* травмы
lessen ['les(ə)n] *v* уменьшать, сокращать
likelihood ['laɪklɪhud] *n* вероятность
maintain [meɪn'teɪn] *v* обслуживать, содержать в исправности, эксплуатировать
malfunction [ˌmæl'fʌŋkʃ(ə)n] *v* не срабатывать, работать неисправно; *n* неисправная работа; неправильное срабатывание
negotiate [nɪ'gəuʃɪeɪt ], [-sɪ-] *v* вести переговоры, договариваться; обсуждать условия
obey [ə'beɪ] *v* подчиняться, слушаться, повиноваться
obtain [əb'teɪn] *v* получать; приобретать
occupational [ˌɔkju'peɪʃ(ə)n(ə)l] *adj* профессиональный;
occupational hazards ['hæzəds] риски, связанные с характером работы, профессиональные риски
occupational safety [ˌɔkju'peɪʃ(ə)n(ə)l 'seɪftɪ] охрана труда, безопасность труда
occur [ə'kɜ:] *v* происходить, случаться
OSHA от Occupational Safety & Health Administration Управление охраны труда
paperwork = paper work ['peɪpəwɜ:k] *n* канцелярская работа; работа с документами
permanent ['pɜ:m(ə)nənt] *adj* постоянный, неизменный; долговременный
probabilistically вероятностно
product design ['prədʌkt dɪ'zaɪn] конструкция изделия, проектирование изделия
property damage ['prɔpətɪ 'dæmɪʤ] имущественный ущерб; материальный ущерб

protective housing [prə'tektɪv 'hauzɪŋ] защитный кожух
reduce [rɪ'djuːs] *v* сокращать, уменьшать
redundant [rɪ'dʌndənt] *adj* излишний, чрезмерный, избыточный
repetitive stress [rɪ'petətɪv stres] постоянная нагрузка, повторяющееся напряжение (связано с хронической травматизацией тканей)
safeguard ['seɪfgɑːd] *n* предохранительное устройство; safeguards меры безопасности; *v* охранять, защищать; предохранять
safety engineering техника безопасности
severity [sɪ'verətɪ] *n* опасность, серьёзность
solvent ['sɔlvənt] *n* растворитель
work flow [wɜːk fləu] производственный поток

Pre-text exercises:
Ex. 1. Mind the rules of pronunciation.
[gz]: exam, exist, example, exert, exalt, exhibition, exact, exude, exhaust;
[ks]: toxic, explosion, mix, expose, extra, complex, expect, explain, exceed, excellent, extremely; excessive;
[ʧ]: inch, branch, launch, chamber, change, chain, attach, research, charcoal;
[ʧə]: structure, manufacture, nature, fracture, temperature, mixture, departure;
[ʃ]: ensure, pressure, distinguish, assure, artificial, machine, initial, emission, fresh, shoot;
[ʒ]: measure, closure, pleasure, treasure, leisure, erasure;
[ʤ]: nitrogen, hydrogen, oxygen, damage, subject, jest, injury, Japan, January;
[f]: phase, photo, phone, cipher, sphere, atmosphere, troposphere, alphabet;
[kw]: square, equal, liquid, frequency, quantum, consequence, quantity, quality.

Ex. 2. Form nouns or adjectives using the suffixes and translate them.
-*er:* to begin, to fight, to import, to produce, to lead, to research;
-*ment:* to advance, to develop, to equip, to manage, to move, to improve;
-*ion:* to pollute, to allocate, to concentrate, to extract, to prevent;
-*ism:* capital, hero, race, national, race, volcano, gangster, Darwin, alcohol;
-*(i)ty:* active, major, similar, productive, local, safe, labile, probable, proper;
-*able:* comfort, peace, honour, suit, value, accept, drink, adapt, pass;
-*ic:* economy, geography, history, period, Islam, tactic, sulphur, ferro, atom;
-*ous:* vapour, continue, gas, poison, danger, right, hazard, sulphur.

## TEXT 1. ***Safety Engineering***

Safety engineering is a field that focuses on preventing accidents and lessening opportunities for human error in engineered environments or in engineering design. It can be applied to many disciplines, including aerospace, manufacturing, public works, and product design.

The primary goal of safety engineering is to manage risk, eliminating or reducing it to acceptable levels. Risk is probability of failure events and the severity resulting from failure events. For instance, the severity of a particular failure may result in fatalities, injuries, property damage. It may be a frequent, occasional, or rare occurrence. Probability is often more difficult to predict than severity due to many factors that could lead to a failure, such as mechanical failure, environmental effects, and operator error.

Safety engineering attempts to reduce the frequency of failures, and ensure that when failures do occur, the consequences are not life-threatening. For example, bridges are designed to carry loads well in excess of the heaviest truck likely to use them. This reduces the likelihood of being overloaded. Most bridges are designed with redundant load paths, so that if any one structural member fails, the structure will remain standing. This reduces the severity if the bridge is overloaded.

Ideally, safety engineering starts during the early design of a system. Safety engineers consider what undesirable events can occur under certain conditions, and project the related accident risk. If the engineer discovers significant safety problems late in the development process, correcting them can be very expensive. This type of error has potential to waste large sums of money and likely more important, human lives and environmental damage.

Ex. 1. Give English equivalents of the words and word combination from the text:

Вред окружающей среде; угрожающий жизни; техника безопасности; происходить; процесс развития; нежелательный результат (исход); уменьшать, снижать; опасность; вероятность; предотвращать аварии; главная цель; приемлемый уровень; привести к; неисправность, повреждение; гарантировать; последствия; устранять; оплошность, ошибка; перегруженный; травмы; материальный ущерб; предвидеть; случайный; свыше; стремиться; чрезмерный; строительный элемент; в условиях; риск возникновения аварии; существенный.

Ex. 2. Answer the questions:

1. What is safety engineering?
2. What is the main aim of safety engineering?
3. What factors can lead to a failure?
4. What can safety engineering ensure?
5. What can safety engineering be applied to?
6. What may the severity of a particular failure result in?
7. What do safety engineers consider during the early design of a system?
8. What can lead to wasting large sums of money?
9. What events can bring to the environment damage?
10. Why will the bridge structure remain standing?

***Remember!***

| |
|---|
| *A cause* is what produces an effect, or makes a thing happen (cause of, not for something).<br>*A reason* is the fact which is put forward as a motive or explanation in order to justify some conclusion. |

Ex. 3. Fill in the blanks with “cause” or “reason”:
1. Carelessness is often the … of fires. 2. He didn’t tell anyone his … for leaving. 3. The … of the accident is still not known. 4. What is the … of lightning? 5. Scientists attribute changes in the weather to natural … . 6. There is no … to suppose he will forget. 7. The … of earthquakes is the heat inside the earth. 8. What was the … for your refusal to go there? 9. Never stay away from the classes without good …. 10. The labour protection engineer inquired about the … of the accident. 11. Although the fact of death is usually clear, the.... of death is often not.12. There must be some deep psychological... . 13. There is a second ... for continuing to look for a proof of this fact.14. I can guess what the real ... of this sudden event is.
Ex.4. Read and act the dialogue. Whose opinion would you support? Give your reasons.

John: Hi, Maria. I am so glad to see you. I got a new job in a factory. The pay is very good!

Maria: Congratulations! Is it a safe place to work?

John: I think so.

Maria: Did your supervisor tell you about safety?

John: No, but I don’t worry. I will be OK.

Maria: Do you remember what we talked about? Your boss has responsibilities about safety.

John: The boss has many workers who do not speak English. Some workers do not have papers. He pays good money, so he does not have to do anything else. He does not have to protect us from danger.

Maria: No, John. You are wrong. All workers have rights. All people who work have the right to a safe workplace.

## *Grammar Revision*

*(видовременные формы глагола, согласование времен, местоимения no, nothing, some, something, any, anything, формы и функции инфинитива)*

*1. a) Translate sentences. Pay attention to the tense forms:*

1. We have recently seen some works by William Blake, an English poet, painter and printer, who lived in the 18th century. 2. When he was young the French Revolution took place and he supported it. In England there was another sort of change was taking place at that time. We think we'll read about these events in his works. 3. English is spoken by over a billion people around the world, in other words, by more than a quarter of the world's population. 4. It is spoken as a mother tongue in the UK, in former colonies such as Australia and New Zealand, and of course by the vast majority of the North American population. 5. So, English may be really considered to be an international language! 6. Has the report been prepared? – No, it hasn't. It is still being prepared. 7. The ship turned just in time, but it had still been damaged by iceberg. 8. The New Zealand earthquake will be followed by tremors lasting an hour.

*b) Put the verbs in a proper tense, paying attention to Sequence of Tenses:*

1. For millennia people believed that someday all people (to be) equal and free, that no one ever (to suffer). 2. People thought that many years ago there (to be) neither rich, nor poor. 3. The ecologists from different countries considered that global warming (to produce) far more profound climate changes than simply a rise in global temperature. 4. In the latest research it was proved that ultraviolet radiation from the sun (to cause) skin cancer. 5. He thought that this (to enable) large-scale industry to develop on a scientific basis in future.

*2. Choose the right pronoun (no, nothing, some, something, any, anything):*

1. (No, some) part of England is particularly mountainous. 2. The United Kingdom has (any, no) written constitution or Bill of Rights. 3. People of Britain are free to do (something, anything) not forbidden by law. 4. At times it was strictly forbidden in Britain to study (any, anything) of the languages of the minorities. 5. Today (some, something) of the country's ethnic minorities have their own languages. 6. Man's biology has given him (some, any) great advantages over other animals, he is capable of speech – a gift which (some, no) other animal possesses. 7. There is (nothing, anything) inside man that tells him how to go hunting or fishing or shopping in a super-market to get his food. 8. Scientists today believe that race has (anything, nothing) to do with intelligence or society progress. 9. There was (anything, something) annoying in her voice. 10. It may take much time for (no, some) waste dumps to become "acid neutral".

***Grammar to Study:***

*Infinitive*

Функции инфинитива в предложении. Способы перевода.

**1. Инфинитив в роли подлежащего.**

a. *To prevent* accidents is one of the safety engineers tasks. – *Предотвращать* аварии (*предотвращение* аварий) – одна из задач инженеров по технике безопасности.

b. *It* is necessary *to lead* rescue operations. – *Провести* спасательные операции – необходимо. (*Необходимо провести* спасательные операции.)

**2. Инфинитив как часть сказуемого.**

a. The role of trees as biological filters is *to absorb* harmful components from the air. Роль деревьев как биологических фильтров – *поглощать* вредные компоненты из воздуха.

b. The house may *become* uninhabitable through the failure of the water-supply. — Дом может *стать* непригодным для жилья в результате аварии в системе водоснабжения.

c. Civil engineers began *to design* bridges with a redundant load. – Инженеры-строители начали *проектировать* мосты с резервной нагрузкой.

**3. Инфинитив в роли прямого дополнения (отвечает на вопрос what?).**

a. Ecologists demand *to build* industrial enterprises beyond city limits. – Экологи требуют *строить* промышленные предприятия за пределами города.

b. We were lucky *to avoid* home fires as a result of a heating appliance failure. – Нам повезло *избежать* пожара, возникшего в доме из-за неисправности нагревательного прибора.

**4. Инфинитив как определение.**

a. Модель: существительное + инфинитив

Перевод: придаточное предложение с союзом «который» в будущем времени или с оттенком долженствования.

The risk assessment to take into account is a fundamental component of any equipment safety project. – Анализ риска, который необходимо учитывать, является основным компонентом любого проекта по безопасности оборудования.

b. Модель: после слов the first, the second, the last и т.д. инфинитив переводится глаголом в личной форме.

He was the first to receive the results. – Он первым получил результаты.

**5. Инфинитив в роли обстоятельства цели или следствия.** Часто в самом начале или в самом конце предложения.

Перевод: придаточное предложение с союзом «чтобы», «для того чтобы».

To warn workers of the hazards employers are required to provide safety labels on machinery and chemical substances. – Чтобы предостеречь рабочих от опасности, работодатели обязаны установить предупреждающие таблички на оборудовании и химических веществах.

*3. Translate sentences. Pay attention to infinitive forms and functions:*
1. She is very communicative, but she does not like to speak in public. 2. Man's ability to speak and develop language allows him to share knowledge with other men. 3. There are many things to be said in favor of, and a few against the proposal to take the population census every 5 years. 4. Man is the only creature that uses one tool to make another. 5. The lectures to be delivered will be dedicated to the Forestry Protection. 6. Hypotheses are to be tested by all means. 7. The discovery made and the data obtained were the first to be published in the Science News. 8. His old teacher was the first person to spot his unusual talent. 9. The research to be carried out now is of great importance. 10. To have a good memory is a great advantage. 11. Ecologists were the first to find man and animal behavior dependence. 12. The problem to be discussed at the conference is of great importance. 13. To understand this method one must know something about its specific principles. 14. The first industrial revolution gave us machines to do the work that had been done before by man's hands. 15. There are difficult problems to be tackled by mankind. 16. To say that a society is civilized doesn't mean that it has a culture. 17. To increase the battle against air pollution some countries are making tougher laws on preserving environment. 18. To prevent storm drain pollution one should place litter in proper trash receptacles (ящик), never on streets. 19. The ozone layer to protect the Earth from the dangerous light of the Sun is being destroyed. 20. The sulfates to be mixed with clouds cause acid rain. 21. If you have pets you should use a “pooper scooper” (совок) and dispose of (ликвидировать) pet waste in the toilet to avoid human infection and gastric illness. 22. Mendeleyev was the first to arrange chemical elements in a Periodic Table. 23. Our students were the last to come into the lab.

## TEXT 2. ***Industrial Safety Engineering***

Industrial safety engineering is the type of industrial engineering concerning people and equipment safety during manufacturing. It involves the development and monitoring of safe production systems, and the assessment and correction of risky work situations, such as hazardous exposures and employee accidents.
The main component of a job in industrial safety engineering is the design and monitoring of systems used to build and assemble products. An industrial safety engineer plans strategies to control work flow safely, creates and communicates these plans to others, and assesses the success of these organizational goals. Industrial safety engineering is a constant process of developing, practicing, and

testing proper occupational safety measures. The design component of safety engineering involves much documentation, including diagrams, written paperwork, and computerized records.

Industrial safety engineers help organizations identify and make plans to correct dangerous situations. They spend much time creating and implementing procedures to be used in the case of equipment malfunction, worker issues, or threatening circumstances. Governmental laws, policies, and suggestions regarding emergencies and hazards are important parts of any company effort to utilize safety engineering most effectively.

Those working in industrial safety engineering are very interested in current company and governmental safety policies and laws. Employees must obey company policies, and equipment must be checked and maintained for proper functioning. Companies must adhere to the policies of governments or agencies, adequately counsel employees on rights and regulations, and negotiate with governmental entities that supervise occupational safety. Additionally, organizations spend time, effort, and money on obtaining safety certifications through a process of inspections and records.

Ex. 1. Give the English equivalents:

Правительственные организации; получить сертификат по безопасности; промышленная безопасность; охрана труда; работодатель; служащий; безопасность оборудования; контролировать; договариваться; осуществлять; получать; включать канцелярскую работу; давать рекомендации служащим; придерживаться политики государства; выполнять техническое обслуживание оборудования; опасные ситуации.

Ex. 2. Match the pairs of the following word-combination:

| | |
|---|---|
| 1. Inspection | a. Меры безопасности |
| 2. Threatening circumstances | b. Сборка |
| 3. Proper functioning | c. Стратегия |
| 4. Policies | d. непрерывное наблюдение |
| 5. Safety measures | e. Угрожающие обстоятельства |
| 6. Assemble | f. Надлежащая работа |
| 7. Monitoring | g. Проверка |

Ex. 3. Answer the questions:

1. What is industrial safety engineering?
2. What does industrial safety engineering involve?
3. What are the functions of industrial safety engineers?
4. In what way do industrial safety engineers help organizations?
5. What is the role of governmental laws and policies for companies?
6. Do the companies have to counsel employees on rights and regulations?

7. Who must obtain safety certifications?
8. What does the design component of safety engineering include?

Ex. 4. Read the interview between The RIA-Novosti news agency correspondent and the graduate of your Department. Play it out.

Correspondent: It is well-known that no manufacturing can do without manufacturing engineers. Does your department train specialists in this field?

Graduate: That's right. Our department trains safety engineers and manufacturing (industrial) engineers.

C.: What do manufacturing engineers do? Are they involved in the processes of increasing the production techniques efficiency?

G.: As industrial production experts, they determine the best ways to use industrial machinery and assembly line workers in order to increase efficiency. Manufacturing engineers perform extensive research on existing technology and production techniques. Manufacturing engineers decide when new machinery or policies are needed. They coordinate with management to ensure plans carried out in a quick and economical manner to keep costs down and increase profits.

C.: Do manufacturing engineers focus on improving worker's safety?

G.: Yes, of course. The engineers create and enforce safety rules to prevent workplace accidents and to minimize the equipment breaking. Professionals understand how important well-prepared and motivated workforce is for the company success.

C.: What professional skills must manufacturing engineers acquire?

G.: Manufacturing engineers are generally well-organized and detail-oriented people. The job requires expert math, physics, and computer skills to design schematics for new processes and systems. Communication skills are also important, as manufacturing engineers must describe their recommendations to executives and explain new procedures to floor workers.

C.: Where do industrial engineers usually work?

G.: They usually work in care organizations or governmental agencies. In many cases to carry out safety duties, they have to keep relationships with specialists from other sectors. Assessment and evaluation can occur in different industries so the industrial safety engineers are to construct safe manufacturing methods and ensure their success.

## TEXT 3. ***Industrial Hazards***

1. One of the important aspects of industrial safety programs is the identification of hazards. Managers typically determine hazards by the examination of

accident records, interviews with engineers and equipment operators, and the advice of safety specialists, such as OSHA or insurance companies. Industrial health hazards are typically categorized into three classes: chemical hazards, in which the body absorbs toxins; ergonomic hazards, such as those resulting from improper lifting or repetitive stress; and physical hazards, in which the worker is exposed to temperature extremes, atmospheric pressure, dangerous conditions, or excessive noise.

2. About one-tenth of industrial accidents result from operating machinery, and these accidents often result in severe injury. Among the most dangerous types of machinery are power presses and woodworking tools, which most commonly cause injury to the hands. A number of mechanisms have been developed to safeguard against such injuries. The simplest of these are barrier guards, in which the moving parts of machinery are enclosed in a protective housing. These safeguards are typically used in conjunction with sensors so that the machine cannot be operated without them. Other types of safeguards include those which prevent a machine from operating unless a worker has both hands properly in place, automated material feeding devices, warning labels, and color coding.

3. Toxins are most commonly ingested through inhalation, and the most commonly inhaled substances are dust, fumes, and smoke. Toxins are also commonly absorbed through the skin, and this is a bigger problem than many business owners and managers realize. Indeed, some studies indicate that skin disorders result in approximately 200,000 lost working days each year. The most common of these disorders is dermatitis, which is particularly problematic in the food preparation and chemical industries.

4. Among the most commonly-used toxins are industrial solvents. The toxicity of solvents varies widely by kind, but the most toxic of these are carcinogens and can cause permanent damage to the nervous system through prolonged occupational overexposure. In addition, organic solvents made of petroleum are often highly flammable. Tightly-fitted respirators with activated charcoal filters are used to protect against inhalation of organic solvents, particularly in spraying applications in which solvents are atomized. Ventilation systems comprised of fans and ducts are also used to control airborne toxins of all types. Rubber gloves are commonly utilized to prevent skin absorption from organic solvents.

Ex. 1. Read the text and say if the following statements:
– true
– false
– there is no information in the text

1. Many business owners and managers realize that toxins are a big problem.
2. Flammable solvents can cause fire at the industrial enterprises.

3. The most toxic substances of industrial solvents are those made of petroleum.
4. The OSHA safety specialists assist in determining industrial health hazards.

Ex. 2. Which part of the text (1, 2, 3, 4) does the following information correspond to:
1. Some protective means and safety equipment are used to prevent workmen from organic solvents.
2. Industrial health hazards are determined according to three types of categorization.
3. A number of safeguard mechanisms have been developed to prevent industrial accidents from operating machinery.

Ex. 3. Choose the right response to the question: What physical hazards are the workmen exposed to?
– they are carcinogens
– they are temperature extremes
– they are dioxin emissions
– they are volatile liquids.

Ex. 4. Define the main idea of the text:
– industrial hazards are typically characterized into several classes;
– industrial hazards can cause different diseases and nervous disorders;
– industrial hazards, their identification and protective means are the main aspects of industrial safety programs;
– industrial hazards are examined by safety specialists;

Ex. 5. Translate into English:

Техника безопасности – основа деятельности предприятия

Несмотря на то, что на предприятиях существуют требования по обеспечению промышленной безопасности, регламентируемые законодательством, полностью избежать техногенных аварий всё же не удается.

От строгого выполнения законодательных норм во многом зависит жизнь и здоровье людей, а также финансовая стабильность компании. Точное соблюдение государственного законодательства в вопросах чрезвычайных ситуаций и источников повышенной опасности является важной частью работы любой компании, думающей о своем будущем. С этой целью компании тратят значительные средства на создание и внедрение регламентов, которые будут эффективно работать в случаях неисправности оборудования или при угрозе жизни.

Основной целью техники безопасности является предотвращение несчастных случаев, а также уменьшение возможности человеческой ошибки при инженерном проектировании. Это условие работает во всех

областях промышленности от авиакосмической отрасли и гражданского строительства до проектирования и разработки изделий домашнего обихода.

***Grammar to Study**:*

*инфинитивные обороты Complex Object и Complex Subject,*
*конструкция Modal Verb + Perfect Infinitive*

*Complex Object*
Объектный инфинитивный оборот

П + СК + | Д + inf | = Complex Object,

где Д – существительное или местоимение в объектном падеже.

*Переводится придаточным предложением, вводимым союзами «что», «чтобы», «как».*

«Вводящие» глаголы-сказуемые:

to want, to wish, would like, to hate, to prefer, to expect, to consider, to think, to suppose, to know, to believe, to order, to allow.

Equipment operators consider woodworking tools and power press to be dangerous. – Операторы по обслуживанию оборудования считают, что деревообрабатывающие инструменты и механический пресс являются опасными.

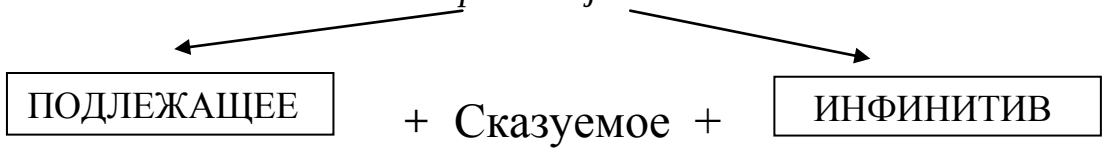
to see, to hear, to watch, to notice, to observe, to feet, to make, to let – после этих глаголов частица “to” перед инфинитивом не ставится.

Safety engineers watched machinery operate. – Инженеры по технике безопасности следили, как работают машины.

*1. Translate sentences. Pay attention to the objective infinitive construction:*

1. We try to make our children live in a better and healthier world. 2. In the 19th century people using nature as consumers believed Man to be “lord and king” of nature and not the child. 3. Everyone noticed the climate change. 4. Economists expected the environment to be capable of absorbing all the rubbish of economy. 5. We heard them start recycling projects. 6. Many electric companies suppose saving energy to be better than making more energy. 7. Our ancestors considered the Earth’s resources to be boundless and endless. 8. Everybody knows the environmental problem to be caused by economic activities. 9. Ecological disaster will make us use the environment carefully. 10. Some experts think pollution to be damaging the resources. 11. Analysts of the Russian Research Center maintain the proportion of the middle class to have reached 10 percent. 12. It is known the first hospice to have been organized with the assistance of philanthropists. 13. I don’t bear the children to be treated badly. 14. They would like the public opinion poll to be carried out as soon as possible.

*Субъектный инфинитивный оборот*
*Complex Subject*




Переводится предложением с вводными словами или неопределённо-личным предложением.

Сказуемое может быть выражено:

| глаголами в пассивном залоге: | глаголами в активном залоге: | словосочетаниями: |
|---|---|---|
| be said – говорят | seem – казаться | be likely – очевидно, вероятно |
| be known – известно | appear – оказываться (по-видимому) | be unlikely – маловероятно |
| be seen – видели, видно | prove – доказывать, оказываться | be sure – безусловно, конечно |
| be reported – сообщают | turn out – оказываться | be unsure – неуверенно, неопределённо |
| be expected – ожидается / полагают | chance – случаться | be certain – конечно, несомненно |
| be supposed – полагают/предполагают | happen – случаться, оказываться | be uncertain – сомнительно |
| be considered – считают, полагают | Пример: The simplest safety measures proved to be barrier guards. Самыми простыми мерами безопасности оказались защитные ограждения | Equipment is sure to be checked and maintained for proper functioning. Оборудование, безусловно, нужно проверять и содержать в исправности для его надлежащей работы |
| be believed – считают, полагают | | |
| be found – обнаружено | | |
| be thought – считается | | |
| Пример: Industrial safety engineering is known to involve the assessment and correction of risky work situations. Известно, что техника безопасности на производстве включает оценку и устранение опасных производственных условий | | |

*2. Translate sentences. Pay attention to the subjective construction:*

1. The construction of another purification plant was reported to have been launched recently. 2. Flame and catalytic neutralisers appeared to be the best of all the devices proposed. 3. Environmental protection measures are said to have become a part of basic industrial plans. 4. In the combustion of any fuel the released gases are certain to contain sulphur and nitrogen oxides. 5. The north-western regions of our country, Norway and Sweden are known to get the biggest share of acid rains. 6. A monthly average of almost 100,000 tonnes of sulphur proved to be carried across the Russian western border. 7. Emission rate limits are supposed to be set for each industrial enterprise. 8. Such project of factories and power stations is unlikely to be endorsed. 9. Environmental protection is expected to be a universal concern. 10. Natural riches seemed to be unlimited. 11. The by-products of enterprise activity are sure to pollute air, water and land. 12. He is likely to have made a full review of the article. 13. He proves to be a leading scientist in this field of biology. 14. The experiments are reported to have been over successfully. 15. The conference is supposed to be held at the end of June. 16. The translation of the article is certain to be published next month. 17. Many foreign delegates appeared to know the Russian language. 18. All the groups happen to be divided into primary and secondary. 19. His interest is certain to have increased in this joint venture. 20. Everybody is sure to know about safety engineering. 21. Our knowledge of the world is believed to be limited in time and space.

**Modal Verbs** (may/might, must, can/could, should, ought to, need not)
**+ Perfect Infinitive** (have + $v_3$)

Переводятся:

1. May – вводным словом «возможно», всё остальное предложение – в прошедшем времени. – You may have seen this article in the book I gave you. – Возможно, ты видел эту статью в книге, которую я дал тебе.
2. Must – вводной фразой «должно быть», всё остальное предложение в прошедшем времени. – He must have left. –Он, должно быть, ушел.
3. Should, ought to – «следовало бы», could, might – «могли бы», переводятся также предложением в прошедшем времени, но с оттенком упрёка и частицей «бы». – You should have taken the text-book in the library. – Вам следовало бы взять учебник в библиотеке (сожаление, упрёк в том, что не сделано).
4. Need (not) – «не нужно/не надо было, можно было и не». – You need not have come. – Не нужно было приходить (а вы пришли). Указывает на то, что совершено ненужное действие.

*3. Translate into Russian:*

1. They must have attended his lecture. 2. They may have obtained the necessary data. 3. A certain way out of the situation must have been found. 4. He could

have changed his opinion on the subject. 5. He is not to be found anywhere. He must have left. 6. I needn't have taken so many things. It was very hard to carry them. 7. It must have been the way out. 8. I don't think it could have been the man you saw. 9. I'm sorry. I ought to have asked you to phone me. 10. Actually she could not remember it, but she knew at once that she must have experienced it some time. 11. It should have been noted that the emotional reactions had varied in intensity and duration. 12. One needn't have gone there in the first place. 13. Practically any task could have been adapted to the scientific study of motor learning. 14. These problems needn't have been investigated unless the investigators had had an adequate apparatus at their disposal. 15. Could the performance have been improved? 16. They ought to have analyzed this phenomenon ahead of time. 17. The Congress cannot have recommended that the research in this field should be expanded. 18. Instrumental responses must have been received in the process of experimentation. 19. If I had known about it before, I would have taken appropriate measures. 20. Had we analyzed this phenomenon ahead of time, the misfortune might have been prevented.

## UNIT III. SAFETY IN EMERGENCY SITUATIONS

*Study the Vocabulary*

affected party [ə'fɛktɪd 'pɑːtɪ] сторона, интересам которой нанесён ущерб
agency ['eɪʤ(ə)n(t)sɪ] *n* агентство, орган, учреждение, ведомство
assume [ə's(j)uːm] *v* принимать на себя, допускать, предполагать
be familiar with [biː fə'mɪlɪə wɪð] знать что-л.
be worth [biː wəːθ] *v* стоить, заслуживать
biohazard [ˌbaɪəʊ'hæzəd] *n* биологическая опасность
burn [bɜːn] *n* ожог; *v* жечь, сжигать
donation [dəu'neɪʃ(ə)n] *n* пожертвование, дар
doubt [daut] *n* сомнение
depend (on) [dɪ'pɛnd] *v* зависеть (от)
determination [dɪˌtɜːmɪ'neɪʃ(ə)n] *n* решительность; определение
disaster [dɪ'zɑːstə] *n* беда, бедствие, несчастье
effort ['efət] *n* усилие
emergency [ɪ'mɜːdʒənsɪ] *n* авария, катастрофа, чрезвычайное происшествие
extinguisher [ɪk'stɪŋgwɪʃə],[ek-] *n* огнетушитель; extinguish (*v*) гасить пожар
first aid kit [fɜːst eɪd kɪt] санитарная сумка, аптечка
hazard ['hæzəd] *n* = danger, опасность
involve [ɪn'vɔlv] *v* включать в себя
measure ['meʒə] *n* мера
mitigation [mɪtɪ'geɪʃ(ə)n] *n* недопущение/смягчение негативных последствий
outcome ['autkʌm] *n* исход, итог, последствие, результат

pose a risk to smb / smth [pəʊz ə rɪsk] представлять угрозу для кого-то / чего-то
personal protective equipment ['pɜːsən(ə)l prə'tɛktɪv ɪ'kwɪpmənt] средства индивидуальной защиты
poisoning ['pɔɪz(ə)nɪŋ] *n* отравление; заражение, интоксикация
prevent [prɪ'vent] *v* предотвращать, не допускать
private ['praɪvɪt] *a* частный
property ['prɒpətɪ] *n* собственность, имущество
protect [prə'tekt] *v* защищать
provide [prə'vaɪd] *v* обеспечивать; снабжать
raise funds [reɪz fʌndz] формировать / собирать денежные средства
relevant ['reləvənt] *a* релевантный; значимый; существенный; важный
respond to [rɪ'spɒnd tu] *v* реагировать (на), отвечать (на)
responsibility [rɪˌspɒnsə'bɪlətɪ] *n* ответственность
revenue ['revənjuː] *n* доход
Safety Data Sheet карта / лист безопасности
Safe Working Procedures безопасные методы производства работ
self-evident [ˌself'evɪd(ə)nt] *a* очевидный, само собой разумеющийся
shortcut [ˌʃɔːt'kʌt] *n* кратчайший путь
splash [splæʃ] *n* выплеск
supervision [ˌs(j)uːpə'vɪʒ(ə)n] *n* надзор, наблюдение
tax [tæks] *n* налог
threaten ['θret(ə)n] *v* грозить, угрожать (чем-л.)
unfortunate [ʌn'fɔːʧ(ə)nət] *a* неудачливый, несчастливый
unless [ən'les ] *conj*. если не, пока не
urgent ['ɜːdʒənt] *a* срочный, неотложный
warning sign ['wɔːnɪŋ saɪn] предупреждающий знак
worsen ['wæːsn] *v* ухудшать(ся)

Pre-text exercises
Ex. 1. Mind the rules of pronunciation:
[əʊ]: pose, growth, most, throw, slow, though, boat, total, donation, know;
[aʊ]: round, pound, ground, sound, outcome, thousand, without, mountain, about, amount, around, account, now, brown, down, allow;
[auə]: our, hour, sour, flower, tower, power, shower;
[ʌ]: some, structure, such, other, must, number, unsafe, uncontrolled, become, discover, above, fund, industrial, public, country;
[əː]: dirty, firm, world, worst, worth, work, personal, emergency determination service, term, turn, first;
[ai]: life, define, describe, sight, environment, supply, right, die, high, sign, mind, wild, dynamic, mild, bind, provide, biohazard.

Ex. 2. Read the international words and guess their meaning. Mind the stress:
phe'nomenon, accomo'dation, con'trol, associ'ation, situ'ation, 'product, inter'vention, 'service, dy'namic, 'company, ˌorgani'sations, 'industries, 'relevant, 'contact, 'adequate, 'accident, 'incident, organi 'zation, 'moral.

Ex. 3. Give the corresponding *verbs* and translate according to the model.
Model: … → translation = to translate → translation: переводить → перевод.
… → action, … → engagement, identity, warning, protection, dependent, donation, dominant, determination, preventive, operating, poisoning, extinguisher.

Ex. 4. Insert the right preposition (*by, on, with, in, to, of, away, from, without, for*).
I. 1.The teacher was writing some words ... the blackboard. The students were writing these words ... their exercise-books. 2. There were some books and pens ... the teacher's table. There were two maps ... the wall and some flowers ... the window-sills. 3. I opened the door and went ... the classroom. 4. It is clear ... me that you don't know your lesson. 5. I get up ... seven o'clock or ... a quarter past seven. But last Sunday I slept very long and got up only ... noon. 6. ... nine o'clock the lecturer entered ... the hall, walked up ... the table, put his bag ... it, looked.... everybody and began his lecture. 7. The lecture, as all the lectures ... this professor, was rather interesting, and the students listened ... him with attention. 8. She complained ... feeling bad and could not answer the questions ... the teacher.

II. 1. An emergency is a situation that poses a risk … health or life 2. The easiest method ... waste disposal was to "throw it ...." 3. Zones … radio radiation are referred to … technically hazardous areas. 4. The purpose … fire brigade is to provide assistance in dealing … any emergency. 5. Do not be involved in hazardous work unless you are trained … the job. 6. Every worker should be protected … personal protective equipment 7. It is unfortunate and painful to learn safety … an accident. 8. They are providing the assistance from funds raised … donations. 9. What one must do … industrial emergency situations? 10. The negative effects ... the ecological structure are caused ... water pollution.

TEXT 1. ***Emergency Situations***

An emergency is a situation that poses an immediate risk to health, life, property, production or environment. Most emergencies require urgent intervention to prevent a worsening of the situation, although in some situations, mitigation may not be possible and agencies may only be able to offer moral help.

While some emergencies are self-evident (such as a natural disaster that threatens many lives), many smaller incidents require that an observer (or affected party) decide whether they are qualified as an emergency.

Safety does not come naturally, it takes effort, time and determination but it is worth all the measures when our life and future depend on it. Accident outcome is never pleasant. It is unfortunate and painful to learn safety from an accident.

The areas of technically hazardous systems are main transport lines, zones of radio radiation, industrial zones, etc.

Most developed countries have a number of emergency services (the fire brigade, the police, and the ambulance service) whose purpose is to provide assistance in dealing with any emergency. They are often operated by government bodies and called public services, which are paid from tax revenue. But in some cases they may be private companies responding to emergencies in return for payment, or they may be voluntary organisations providing the assistance from donation funds.

There may be industrial emergency situations. Electric networks and equipment, machine tools, hand tools, gas cylinders and gas supply systems, weapons can become danger sources. Occurrence of such hazards is associated with the presence of faults in technical systems and wrong actions of a man when using them.What must a person do in industrial emergency situation?

Your personal responsibility in industrial emergency situations:

- Be familiar with company's rules & regulations.
- Do not take unsafe shortcuts.
- Read, understand & follow closely with relevant safety documents such as Safety Data Sheets and Safe Working Procedures.
- Follow all safety and warning signs.
- Know whom to contact with and their contact numbers.

Do not be involved in hazardous work unless –

- adequate control measures are in place
- you are trained for the job
- you are protected with adequate personal protective equipment (protective footwear, working clothes, various protective devices, fire extinguisher, first aid kit)
- there is a direct supervision
- if in doubt, ask, do not assume.

Ex.1. Give the English equivalents:

Чрезвычайная ситуация; не подвергая себя опасности; представлять угрозу для жизни; если сомневаешься; требует срочного вмешательства; неконтролируемая опасность; прямое руководство; предотвратить ситуацию; средства индивидуальной защиты; моральная помощь; стихийное бедствие; пострадавшая сторона; соответствующие меры контроля; требует усилий, времени и решимости; вредное производство; угрожать жизни; результаты / последствия несчастного случая; аварийные службы; личная ответственность; предупреждающие знаки; знать нормативы и правила; оказывать помощь; аварийные ситуации на производстве; государственные службы; документ, содержащий информацию по безопасности.

Ex. 2. Answer the questions:

1. What is an emergency?
2. Are emergencies always self-evident?
3. What emergency services do you know?
4. What are technically hazardous areas?
5. What must one do in industrial emergency situations?
6. What is personal protective equipment?
7. How can you explain the expression “in case of emergency”?

Ex. 3. Put the necessary emergency actions in the *chemical splash situation* in a proper order:

| № | Necessary Emergency Actions in Chemical Splash |
|---|---|
| | Immediately rinse the affected area with lots of water. |
| | Know where the emergency shower / eye wash station is. |
| | Report to immediate superior & NUS mentor |
| | Seek medical attention |
| | Remove contaminated clothing (include under garments) and change to new clothes. |

Ex. 4. Translate into English:

Чрезвычайная ситуация – это ситуация, в которой возникает какая-либо угроза жизнедеятельности, что требует экстренных действий по предотвращению потерь (loss prevention). К зонам действия технически опасных систем относятся транспортные магистрали, зоны радиоизлучения, промышленные зоны и т.п. Электрические сети и приборы, станки, ручной инструмент, газовые баллоны и сети, оружие и т.п. могут стать источником опасности. Возникновение таких источников

опасности связано как с наличием неисправностей в технических устройствах, так и с неправильными действиями человека при их использовании.

В большинстве развитых стран существуют экстренные оперативные службы, целью которых является помощь в решении любых чрезвычайных ситуаций.

Ex. 5. Check how well you know these danger signs.

5.1. Mutch the signs: (a)Warning! (b)Toxic! (c) Biohazard! (d) Radiation! (e) (f) Laser Hazard! (g) Fire Hazard! (h) High Voltage.

1  2  3  4 

5 

6  7 

5.2. Explain the signs in the pictures below according to the plan:

– type of production
– type of danger (environmental, industrial, household, social, etc.)
– why it is dangerous

a) 


b) 

TEXT 2. ***Emergency Actions in Different Situations***

Read the text on the emergency actions in different situations. The titles of each passage are missing. Choose them from the box. Match the titles up to passages.

There are two titles you don't need.

| | |
|---|---|
| a) Carbon Monoxide Poisoning | e) Snake Bites |
| b) Electrical Burn | f) Shock |
| c) Bone Fracture | g) Hysteria |
| d) Upset Stomach | h) Burn |

1. Do not remove any clothing from the area which has been burned as this may lead to infection of the burnt area. Do not wash or apply any cream or paste. Apply a dry dressing which should be left exposed, but protected from sunlight. The belief that air must be completely excluded from a burn is wrong. Do not prick blisters.

2. If possible, turn off the electric current, or remove the victim from the current. Do not touch the victim directly or with anything metallic or wet while he is still in contact with the current flow.

3. If a victim is in shock, lay him on his back and make him comfortable and cover with a dressing. He should be protected from chilling. He should be allowed to sip, but not gulp. If necessary, give the liquid by the spoonful to avoid gulping.

4. The victim should be put on his back and movement of any sort should be prevented. A tourniquet should be applied round the limb between the bite and the heart, and tightened until the veins stand out. If the limb becomes blue, loosen the band a little. In the meantime, raise the bitten limb to reduce blood circulation.

5. If the person is sick repeatedly, do not let him eat any solid food for 24 hours. He should drink only boiled or bottled water. If he has to go to the bathroom constantly, he should be given a special medicine. A person suffering from severe and prolonged exposure should be admitted to hospital as soon as possible.

6. Get the victim out of the poisonous atmosphere, or if in a car, open all windows and doors after turning off the engine. If he is still breathing, it is sufficient to watch him to ensure that breathing continues until medical help arrives. If he is not breathing, apply artificial respiration at once.

*Vocabulary Notes:*

| | | | |
|---|---|---|---|
| artificial respiration | искусственное дыхание | limb [lɪm] | конечность |
| | | loosen | ослаблять |
| artificial warmth | искусственное тепло | solid food | твёрдая пища |
| bite | кусать, укус | tighten | затягивать, сжимать |
| blister | пузырь | | |
| blood [blʌd] circulation | кровообращение | to gulp | быстро глотать, заглатывать |
| bone fracture | перелом костей | to sip | пить маленькими глотками |
| breath ['briːð] | дышать | | |
| chilling | охлаждение | | |
| current flow | электрический ток | tourniquet ['tuənɪkeɪ] | жгут |
| hysteria [hɪs'tɪərɪə] | истерический невроз | turn off | отключать |

## ***Grammar Revision***

*(герундий, герундиальный оборот, причастия I, II,)*

*1. Translate sentences. Pay attention to gerund:*

1. Carrying out experiments is important for every scientist. 2. It is no use searching for another approach. 3. It seems to me the case is not worth mentioning. 4. Measuring resistance is necessary in many tests. 5. One should avoid mixing these two substances. 6. The engine went on running. 7. It is no good arguing about this issue. 8. In recent years man has succeeded in controlling chemical changes. 9. Catalysts aid in accelerating reactions. 10. The group of experts looked forward to obtaining reliable results. 11. The article aims at acquainting the readers with modern achievements in medicine. 12. The expansive force of water in freezing is enormous. 13. Upon being heated to a high temperature many metallic compounds are decomposed. 14. Sulphur is hardened by being mixed with copper.

*2. Translate sentences. Pay attention to gerundial construction:*

Biologists object to farmers spraying chemicals on crops. 2. Low electric conductivity of rubber resulted in its being used in cables. 3. This depends on the atomic weights of these substances being equal. 4. He insisted on the engine being examined. 5. These are the chief causes of this material being used. 6. In spite of necessary results having been obtained, the professor made the students repeat the experiment. 7. They relied on the date being published. 8. Combustion may be incomplete owing to insufficient oxygen being present. 9. There is little probability of atmosphere being on that

planet. 10. Metals cannot be dissolved without its being changed into new substances. 11. Without his participating in the concert the programme will be dull. 12. He couldn't leave without receiving necessary information.13. Without practicing English every day it is difficult to have good knowledge of the language. 14. Children are usually very angry with their parents for having divorced and can't work it out emotionally.

*3. Compare Participle I and Participle II:*

*A. Причастие как определение*

| | |
|---|---|
| 1) developing countries | 1) developed countries |
| 2) boiling water | 2) boiled water |
| 3) travelling object | 3) travelled distance |
| 4) changing conditions | 4) changed conditions |
| 5) connecting line | 5) connected line |
| 6) warning sign | 6) warned population |
| 7) affecting party | 7) affected party |
| 8) preventing measures | 8) prevented incident |
| 9) burning gas | 9) burned gas |
| 10) determining word | 10) determined factor |
| 11) tightening bandage | 11) tightened leg |
| 12) burning gas | 12) burned gas |
| 13) threatening situation | 13) threatened people |

*B. Причастие как обстоятельство*

These words can be used before the Participle:

| | |
|---|---|
| When – когда (часто не переводится) | While – в то время как (часто не переводится) |
| Until – пока не | Unless – если не |
| If – если | Once – когда, как только, если |
| Though – хотя | |

1. While studying light, Newton invented a telescope. 2. We know that most bodies expend when heated. 3. Having calculated the data the scientist applied them in his research. 4. Being expressed in terms of international metric system, the results of the measurement are clear to everybody. 5. Unless given the correct data, they cannot continue their work. 6. Until translated into English, this paper was not known. 7. Having been measured with unreliable instruments the data were incorrect. 8. Once started, the process is difficult to stop. 10. While working in an industrial area, one is to follow all safety rules. 11. When accompanied by an engineer, he felt confident. 12. This report provides an overview of the findings and recommendations common to all or most organizations, unless otherwise specified.

*4. Translate sentences. Pay attention to Participle:*

Having analyzed the situation in detail she understood the real picture of the phenomenon. 2. The events were connected with the experiments carried out in the experimental laboratory. 3. The students being chosen for the team are under 19. 4. They couldn't agree with his point of view expressed so illogically. 5. The developing science raises more and more important questions. 6. The discovery made and the data obtained were published in Science News. 7. To watch a changing world is rather interesting. 8. Having made observations on the subject of his investigation he summarized the new data. 9. When published, the new data produced polemics and a great number of discussions. 10. Having been conducted in the southern regions, the public inquiry was transferred to the north regions. 11. He spoke of the results obtained, conclusions made and future plans taken. 12. He told us about the experiments being carried on in his laboratory. 13. Having been weakened by storms, the bridge was no longer safe.

***Grammar to Study:***

*Nominative Absolute Participle Construction*

*Независимый причастный оборот*

Переводится:

1. В начале предложения – придаточным предложением с союзами «так как, после того как, когда, если»: The speed of lights being extremely great, we cannot measure it by ordinary methods. – **Так как** скорость света чрезвычайно велика, мы не можем измерить её с помощью обычных методов.

2. В конце предложения – придаточным предложением с союзами «причём, а, и, но»: All substances consist of molecules, molecules being made up of atoms. – Все вещества состоят из молекул, **причем** молекулы состоят из атомов.

3. Может быть введён словом “with”, причем “with” не переводится: With space ships flying so far, we are able to reach some remote planets. – Теперь, когда космические корабли летают так далеко, мы можем добраться до далёких планет.

*5. Translate sentences. Pay attention to the Nominative Absolute Participle Construction:*

1. Water is denser than air, rays being reflected towards the perpendicular. 2. There exist of course various kinds of light, each corresponding to some definite colour. 3. Work is the result of energy, the latter being defined as capacity for doing work. 4. Silver being very expensive, we seldom use it as a conductor. 5. Other conditions being equal, the acceleration will be the same. 6. With the experiment carried out, they could make necessary notes. 7. With

research involving more and more people, the profession of a scientist has become one of the most popular nowadays. 8. Acids react with oxides of all the metals, with salt and water being formed. 9. All these elements are radioactive, their atoms being unstable and undergoing spontaneous disintegration. 10. The weather being windy, they cancelled the experiment.

## UNIT IV. FIRE SAFETY

*Study the Vocabulary*

accept [ək'sept] *v* принимать, брать, соглашаться
boiler ['bɔılə] *n* котёл, бойлер
building code ['bıldıŋ ˌkəʊd] строительные нормы и правила
building safety ['bıldıŋ ˌseıftı] безопасность строительства
cause [kɔ:z] *v* служить причиной, поводом
combustible material [kəm'bʌstəbl mə'tıərıəl] воспламеняемый / горючий материал
damage ['dæmıdʒ] *n* вред, ущерб
escape route [ıs'keıp ˌru:t] путь эвакуации
facility [fə'sılıtı] *n* устройство, средство, оборудование
fire code ['faıə ˌkəʊd] нормы противопожарной безопасности
Fire engineering ['faıə ˌendʒı'nıərıŋ] техника пожарной безопасности
fire extinguishing ['faıə ık'stıŋgwıʃ] тушение пожара, пожаротушение
fire warden ['faıə 'wɔ:d(ə)n] ответственный за пожарную безопасность
flame [fleım] *n* пламя
furnace [ˈfərnəs] *n* печь
heating appliance ['hi:tıŋ ə'plaıəns] обогревательный прибор
hot spot ['hɒtˌspɒt] очаг опасности
implement ['ımplımənt] *v* реализовывать, внедрять
in accordance with [ın ə'kɔ:dəns 'wıð] в соответствии с
injury ['ındʒərı] *n* ущерб, убыток, телесное повреждение
jam [dʒæm] *n* давка, пробка
likelihood ['laıklıhud] *n* вероятность
mitigation [ˌmıtı'geıʃ(ə)n] *n* смягчение, уменьшение
notify ['nəutıfaı] *v* извещать, уведомлять
outlet ['aʊtlɛtˌ -lıt] *n* выход, розеточная часть
overload [ˌəuv(ə)'ləud] перегружать
plug [plʌg] *n* штепсельная вилка
portable heater ['pɔ:təbl 'hi:tə] портативный, переносной обогреватель, нагревательный прибор
provision [prə'vıʒ(ə)n] *n* положение, условие
spark [spɑ:(r)k] *n* искра

storage area складская площадка, склад
stuff [stʌf] *n* материал, вещество, вещи
suppression [sə'preʃ(ə)n] *n* подавление, блокировка
survive [sə'vaɪv] *v* остаться в живых, выжить
threat [θret] *n* опасность, угроза
utilize ['juːtɪˌlaɪz] *v* утилизировать, использовать, расходовать
wiring ['waɪərɪŋ] *n* электропроводка
workout ['wɜːkaut] *n* тренировка

Pre-text exercises
Ex. 1. Mind the rules of pronunciation:
[k] в словах греческого происхождения: school, scheme, chemical, chemicals, technical, mechanism, architect, character, monarchy, epoch;
[aɪ] *verbs:* try, fly, unify, occupy, multiply, rely, supply, reply, simplify, notify;
[ɪ]: gradually, normally, typically, mostly safety, industry, injury, ordinary;
[j]: yet, yard, yellow, yield, beyond, yes, yesterday, year, yen, York, youth;
[t]: developed, expressed, influenced, produced, worked, stopped, reached;
[d]: threatened, drilled, referred, uncontrolled, caused, called, formed, planned;
[id]: divided, unlimited, overloaded, implemented, affected, completed;
[θ]: earth, north, threat, truth, depth, length, warmth, width, health, death.

Ex. 2. Translate and remember nouns with the following suffixes:
-ance: substance, distance, importance, admittance, dissonance, appearance, disappearance, accordance, clearance, expectance, maintenance, acceptance;
-ence: difference, existence, influence, reference, sentence, turbulence, absence, preference, conference.
-tion: construction, situation, detection, suppression, mitigation, evacuation, instruction, reception.
-ist: technologist, biologist, scientist, physicist, ecologist, analyst, chemist.
Ex. 3. Translate the chains of words: safety instruction, fire likelihood beginning fire, reception desk, fire safety measures, wood burning stove, fire call point, fire-fighting equipment, last leaving person, fire fighting team, electrical accessory work, hot spot areas, periodical fire warning and extinguishing workout, primary fire-fighting means, immediate fire evacuation, Principal Safety Engineer report, accident prevention rules, excess paper jam, key fire safety components, local building code provisions, combustible material storage areas, insufficient protection effect, great fire property damage, uncontrolled fire spread, affected areas evacuation, fire hazard list, overloaded built-up electrical systems.

TEXT 1. ***Fire Safety***

Part 1. ***Safety Measures***

Fire safety refers to safety measures that are taken

- to prevent or reduce the likelihood of a fire that may result in death, injury or property damage;
- to notify of an uncontrolled fire in the event it occurs;
- to survive in and evacuate from affected areas or
- to reduce the damage caused by a fire.

Fire safety measures include those that are planned during the construction of a building or implemented in structures that are already standing.

Threats to fire safety are referred to as fire hazards. Fire hazards may include situations that increase the likelihood of a fire. At the enterprise fire hazards may be:

- Electrical systems that are overloaded
- Combustible material storage areas with insufficient protection
- Combustibles near equipment that generates heat, flame, or sparks
- Smoking (cigarettes, cigars, pipes, lighters, etc.)
- Equipment that generates heat and utilizes combustible materials
- Heating appliances such as furnaces, boilers, portable heaters, etc.

That is why fire safety is often a component of building safety written in a building code. Key elements of the fire safety are:

- to build a facility (a building) in accordance with the local building code and
- to maintain a facility (a building) in accordance with the provisions of a fire code.

Fire engineering is an application of science and engineering principles to protect people, property, and their environments from the harmful and destructive effects of fire and smoke. It focuses on fire detection, suppression and mitigation as well as maintaining reliable conditions for evacuation from a fire.

Part 2. ***Fire Safety Instruction***

*Preventative Fire Safety Measures in Tver State Technical University*

1. Before being accepted to work an employee is to be fire-drilled.
2. The inside of the building is to be kept clean and tidy:
   - the doorway is to be free;
   - the rooms are not to be jammed by excess paper, boxes and other stuff;
3. When using a computer, a printer, a copier and other electronic appliances one must observe the accident prevention rules.
4. Periodic inspection for good condition of outlets, plugs and open wiring is to be carried out. All failure events should be immediately reported to Principal Safety Engineer.
5. Employees should know the primary fire-fighting means and be aware of safety instruction.
6. Employees are to have a periodical fire warning and extinguishing workout in accordance with the University Rector's order.
7. Employees should know the escape routes from any hot spot areas.
8. No smoking in the workplace.
9. A fire warden is to monitor the work of electrical equipment.
10. The last leaving person is to leave the key at the reception desk.

Ex. 1. Match the pairs:

| | |
|---|---|
| 1. Fire safety | a) a person trained in accident prevention, especially in industrial situations |
| 2. Prevent | b) putting out flames |
| 3. Fire warning | c) keep from happening |
| 4. Fire extinguishing | d) freedom from fire danger or risk of injury |
| 5. Fire code | e) remain alive |
| 6. Result in | f) fire signalling |
| 7. Safety Engineer | g) lead to |
| 8. Fire-fighting means | h) source of fire danger |
| 9. Fire hazard | i) fire prevention facilities |
| 10. Survive | j) fire safety regulations |

Ex. 2. Choose the right word:

1. Safety measures are taken to prevent or ……. the likelihood of a fire.

a) induce b) produce c) reduce

2. Employees should know the escape routes from ……. areas.

a) heat spot b) hot spot c) spot fire

3. In case of fire employees should be aware of ……. instruction.

a) safety b) hazard c) employment

4. Fire engineering focuses on fire ……., suppression and mitigation.

a) transformation b) condition c) detection

5. Combustibles near equipment can generate heat, ……. or sparks.

a) flame b) fuel c) water

6. …….electrical systems can become fire hazards at the enterprise.

a) loaded b) over loaded c) overcrowded

7. People should be evacuated from ……areas.

a) protected b) effected c) affected

Ex. 3. Answer the questions:

1. What are safety measures taken for?
2. What industrial fire hazards do you know?
3. What does safety engineering focus on?
4. Name the key preventative fire safety measures.

Ex. 4. Put the necessary emergency actions in the *fire situation* in a proper order:

| № | Necessary Emergency Actions in Fire Emergency |
|---|---|
| | Seek help & inform a supervisor |
| | Fight a if you know how to use the firefighting equipment, if not, leave it to the fire fighting team |
| | Know where the fire call point is |
| | Activate the alarm if there is a real fire |
| | Follow close instruction given by Fire Safety Manager or respective Fire Warden |
| | Evacuate from building. |

Ex. 5. Group the words into the sources of possible home fire hazards given below: matches, fireplaces, cigarettes, boiling, cigars, lighters, ovens, furnaces,

boilers, fireplace chimneys, clothes dryers, wood burning stoves, curling irons, hair dryers, freezers, pipes, electrical wiring in poor condition, stoves, lap-tops, leaking batteries, portable heaters, refrigerators, computers, roasting, stand lamps, frying.

- Kitchen fires from unattended cooking such as…
- Smoking…
- Cooking appliances
- Heating appliances
- Household appliances
- Personal ignition sources
- Electronic and electrical equipment

## *Grammar Revision*

*(отглагольное существительное, герундий и причастие I в сравнении, слова заменители, местоимения it, one)*

*1. Translate sentences. Pay attention to V-ing forms:*

1. About 1/3 of flammable trash comes from packaging. 2. Taking an active part in the development of fire engineering, scientists insist on all the pros and cons being thoroughly weighed. 3. The observing of electronic and electrical equipment indicates that they could bring about a fire. 4. Being closely related to the economy, the environment supplies it with all its resources, such as water, timber, minerals and oil. 5. Some developing countries have reserves being undisclosed yet. 6. The conquering of nature has led to ecological problems. 7. A building code involving a fire code should be seen as a complex system. 8. Not every industrial enterprise is capable of reconstructing the alarm system within such a short period. 9. By the beginning of the year all the fire protective measures plans should be updated. 10. He thinks of becoming a fire inspector. 11. I'm sorry for keeping you waiting. 12. The electrical wiring in a neighbouring room was in poor condition.

## Grammar to Study:

Слова-заместители.

Для того чтобы избежать повторения существительного, употребляются местоимения one / ones (для мн. числа) и that / those (для мн. числа):

При этом one / ones могут заменять ранее упомянутые исчисляемые существительные:

This device is more expensive than that one. – Это устройство более дорогое, чем то.

That / those могут заменять ранее упомянутые существительные, за которым следует какой-либо предложный оборот (существительное с предлогом):
The railways of our country are longer than those of any other country. – Железные дороги нашей страны длиннее, чем (железные дороги) какой-либо другой страны.

Слова-заместители the latter и the former также используются для избежания повторения. Эти слова-заместители имеют значение «первый (из них) ... последний (из упомянутых)».

The latter procedure is much more complicated than the former one. – Последняя (из упомянутых) процедур гораздо сложнее, чем первая.

*1. Translate sentences. Pay attention to the use of words one – ones; that – those, the former ... the latter:*
1. This finding is more accurate than that one. 2. The right hand is usually stronger than the left one. 3. The petroleum consumption is very big. We want to get smaller one. 4. This is a new measuring instrument; its accuracy is much higher than that of the old one. 5. The most extensive research was that of our professor. 6. We use the method similar to those given above. 7. The instruments at our laboratory are not as modern as those at yours. 8. As for advantages, the following ones can be mentioned. 9. The former method is much more complicated than the latter one. 10. In this paper we shall take the former formula. 11. They are selling their house to move to a smaller one. 12. I've got several handbooks, which ones would you like? 13. The climate here is like that of France. 14. The interests he is most likely to enjoy will be those which enable him to show off himself or his talents. 15. I take the former view. 16. I would readily choose the latter option.

*2. Translate sentences. Pay attention to the words it, one:*
1. The City of London had walls all round it at one time. 2. It is hard to believe that long ago even the King had to knock at the city gate and wait till the Lord Mayor gave him permission to enter. 3. It is at night that the West End of London is most gay, especially near Piccadilly. 4. Rural settlements of Great Britain differ from the traditional ones in other countries, they resemble their suburbs. 5. One should note that the number of sever injures at the enterprises decreased several times. 6. The most attractive feature of any science is that it enables us to shape the world. 7. It is impossible to ban new ideas or to stop progress in science and technology; this is an objective law of society development. 8. They say he has an electromobile, but no one has ever seen it. 9. No one knows how many people can be supported by the Chief. 10. It is television that has been called man's "third eye". 11. It is known from experience that safety measures are supremely important. 12. We are the only ones who know.

## UNIT V. ENVIRONMENTAL SAFETY

*Study the Vocabulary*

air pollution [eə pə'luːʃ(ə)n] загрязнение воздуха
airborne ['eəbɔːn] *a* переносимый или перевозимый по воздуху
alter ['ɔːltə] *v* изменять; менять
assign [ə'saɪn] *v* назначать, определять, устанавливать; assign responsibility возлагать ответственность на
assure [ə'ʃuə] *v* гарантировать, обеспечивать
biodiversity [ˌbaɪəudaɪ'vɜːsɪtɪ] *n* биологическое разнообразие
breakdown ['breɪkdaun] *n* нарушение; ухудшение
breathe [briːð] *v* дышать
cancer ['kæn(t)sə] *n* рак
$CO_2$ carbon dioxide ['kɑːb(ə)n daɪ'ɔksaɪd] двуокись углерода
concern [kən'sɜːn] 1) проблема, вопрос; 2) интерес, участие; 3) беспокойство, озабоченность, опасение
consideration [kənˌsɪd(ə)'reɪʃ(ə)n] *n* рассмотрение; обсуждение
deliver [dɪ'lɪvə] *v* доставлять, передавать
depletion [dɪ'pliːʃ(ə)n] *n* уменьшение, истощение (ресурсов)
determinant [dɪ'tɜːmɪnənt] *n* определяющий фактор
distribution [ˌdɪstrɪ'bjuːʃ(ə)n] *n* распределение; распространение
electrical grid [ɪ'lektrɪk(ə)l grɪd] электросеть
emerge [ɪ'mɜːʤ ], [iː-] *v* появляться; возникать (о вопросе)
emission [ɪ'mɪʃ(ə)n ], [iː-] выброс
endangered [ɪn'deɪnʤəd], [en-] *a* находящийся под угрозой исчезновения
energy production ['enəʤɪ prə'dʌkʃ(ə)n] энергетическая продуктивность
environment [ɪn'vaɪər(ə)nmənt], [en-] *n* окружающая среда
environmental health [ɪnˌvaɪər(ə)n'ment(ə)l ], en- helθ] состояние окружающей среды; environmental health efforts исследование состояния окружающей среды
expose [ɪk'spəuz ], [ek-] подвергать (опасности, воздействию радиации); оставлять без защиты, ставить под удар
fishery ['fɪʃərɪ] *n* рыболовство, рыбоводство, рыбный промысел
fungal ['fʌŋg(ə)l] *a* грибковый
greed [griːd] *n* жадность
harmful ['hɑːmf(ə)l ], [-ful] *a* вредный, пагубный, губительный
impact ['ɪmpækt] *n* сильное воздействие; влияние
imply [ɪm'plaɪ] *v* предполагать, подразумевать, значить
indoor air [ˌɪn'dɔː eə] воздух в помещении
induced [ɪn'djuːst] *a* вынужденный
injury ['ɪnʤərɪ] *n* повреждение, травма; повреждение, убыток, ущерб
interaction [ˌɪntər'ækʃ(ə)n] *n* взаимодействие

jeopardize ['ʤepədaɪz] *v* подвергать опасности, рисковать
maintain [meɪn'teɪn] *v* поддерживать, сохранять
official *n* сотрудник
outgrow [ˌaut'grəu] (outgrew , outgrown) *v* перерастать, опережать в росте
output ['autput] *n* продукция, выпуск
overtaxed [ˌəuvə'tækst] чрезмерный, слишком напряженный
pest [pest] *n* с.-х. вредитель, паразит
pest control борьба с вредителями
pollen ['pɔlən] *n* пыльца
pollute [pə'luːt] *v* загрязнять
power plant ['pauəˌplɑːnt] *n* электростанция
public health ['pʌblɪk helθ] здравоохранение
run a / the risk [rʌn ə / ðə rɪsk] *v* рисковать, подвергаться риску
runoff ['rʌnɔf] ; = run-off *n* сток; отбросы, отходы
scarcity ['skeəsətɪ] *n* недостаток, нехватка (чего-л.)
scale [skeɪl] *n* маштаб
set the stage for [set ðə steɪʤ fɔː] подготовить / создать условия для чего-л.
severe [sɪ'vɪə] *a* серьёзный
protect [prə'tɛkt] *v* защищать
shortage ['ʃɔːtɪʤ] *n* нехватка, недостаток; дефицит
shut down [ʃʌt daun] *v* отключить (электричество)
sneeze [sniːz] *n* 1) чиханье; *v* 2) чихать
sniffle ['snɪfl] *v* сопеть, гнусавить
sufficient [sə'fɪʃ(ə)nt] *a* достаточный
tax [tæks] *v* истощать; подвергать испытанию
treatment ['triːtmənt] *n* лечение
viral ['vaɪər(ə)l] *a* вирусный
waste treatment [weɪst 'triːtmənt] удаление отходов; очистка отходов; утилизация отходов
wasteful use ['weɪstfʊl ˌjuːs] расточительный / неэкономный расход ресурсов
waterborne ['wɔːtəbɔːn] *a* передающийся через воду
water-purification plant ['wɔːtəˌpjuərɪfɪ'keɪʃ(ə)n plɑːnt] водоочистительная установка
World Health Organization; WHO [wɜːld helθ ˌɔːg(ə)naɪ'zeɪʃ(ə)n] Всемирная организация здравоохранения; ВОЗ
Pre-text exercises:

Ex. 1. Pay attention to the meaning of prepositions.
*of:* the pressure of power, to speak of something, one of them;
*to:* to show to the students, to go to the interview, to turn to the right;
*by:* to operate by hand, enter by the back door, to speak by telephone, by means of the research, to sit by the window, return the books by Tuesday, to be written by smb, a tree by the house, four by three equals twelve;

*with:* to illustrate with tables, to write with a pencil, a form with questions, to speak with our friends;
*about:* to speak about the lecture, to do about 15 questionnaires;
*in:* in time, in a few days, in terms of, in a different way.

Ex. 2. Insert the right preposition (*of, to, with, by, about, by means of, in*).
1. Mr. Hall delivers lectures … the students of a technical college. 2. I'll start … a few days. I don't feel like it now. 3. He always comes … his work … time. 4. The students always try … make experiments … their own hands. 5. Laboratories and workshops are equipped … up-to-date instruments, computers, machine-tools, audio-visuals and other training appliances. 6. Mr. Hall tries … illustrate his lectures … numerous tables and figures. 7. There is something interesting … the properties of this respondent group … this scientific paper. 8. We attach one new characteristic … the marketing group by means of an analytical survey. 9. … some experiments the lecturer illustrates the measurements of social tension. 10. Today, more than ever, war is an evil and completely indefensible … human morals or civilization. 11. You express what they have said or written … a different way. 12. The required and optional subjects give a solid basis … general education … future specialists. 13. We are taught to carry out a public opinion poll, to deal … managerial systems, advertisement and mass media. 14. The lecture, as all the lectures ... this professor, was rather interesting, and the students listened ... him with attention.

## TEXT 1. ***Environmental Health Safety***

### Part 1. ***What is Environmental Health Safety?***

Environmental health is a wide branch of study and theory focused on illness and conditions caused by external factors around human beings. These external factors may be physical, chemical and biological. Air and water quality, climate, ultra-violet radiation, and human-created toxins are all issues carefully studied with the goal of improving environmental health.

Global Environmental Health Safety. Environmental health safety on a global scale deals primarily with issues related to rising populations, war and impact on developing countries. Higher populations can create an environment for the breakdown of environmental health safety. Lots of people excise the natural environment (water and other natural resources) as well as the manufacturing environment (power and water-purification plants).

Regional Environmental Health Safety. Environmental health safety on the regional scale is similar to that of the global scale. Issues like air pollution, water safety and energy production vary between regions. A small population may not have the levels of air pollution that a large city does, so fewer respiratory illnesses will be seen. Water safety usually can be assured when the levels of regional water are sufficient for the local population, but when a population outgrows its clean water source, public health can be jeopardized. Energy production is similar in that an overtaxed electrical grid runs the risk of shutting down.

Local Environmental Health Safety. Waste treatment, pest control, food safety, indoor air and injuries are among the environmental health issues dealt with locally. The first three are necessary to prevent bacterial, fungal and viral infections; indoor air quality must be maintained to assure respiratory health; injuries at home and at the workplace may seem a minor issue, but when regulations are not in place it can be difficult to assign responsibility for injuries and their treatment.

Ex. 1. Give the English equivalents.

Предотвращать инфекции; производственное окружение; определять ответственность (за); на рабочем месте; утилизация отходов; риск отключения электричества; электростанция; чрезмерный рост населения; в большом масштабе; ухудшение состояния окружающей среды; улучшение состояния окружающей среды; внешние факторы; качество воды; водоочистительная установка; тщательно изучать; ультрафиолетовое излучение; влияние (на); природные ресурсы; борьба с вредителями;; безопасность пищевых продуктов.

Ex. 2. Translate sentences. Pay attention to the chain of nouns:
agriculture land degradation; population growth decrease; health safety breakdown; national security misunderstanding; ecosystem change assessment; mineral mining abundance; biodiversity disappearance issue; fresh water supply depletion; pest control intensification; energy production increase; harmful component absorption; city planning improvement; air pollution reduction; exhaust fume elimination; purification plant construction; smoke emission reduction; industrial waste purification; energy consumption growth; ozone layer depletion; radiation limit determination.

Ex. 3. Answer the questions.
1. What is environmental health?
2. What issues related to improving environmental health are carefully studied?
3. What does environmental health safety on a global scale deal with?

4. How do the problems such as air pollution, water safety and energy production vary in different regions?
5. What is the relationship between environmental protection and health promotion?
6. In what connection can public health be jeopardized?
7. What issues does local environmental health safety deal with?
8. What is necessary for preventing bacterial, fungal and viral infections?
9. Why must indoor air quality be maintained?
10.Why can it be difficult to assign responsibility for injuries and their treatment?

Ex. 4. Remember the phrases of measurement from the box and complete the sentences below.

| width, area, depth, length, 80%, the XXth century, weight, the age of, meters |
|---|

1. The smaller lake ranges from five to fourteen feet in _____.
2. Everything in the room looks in keeping with _____ the building.
3. The _____ of the river is 250 meters.
4. The book was 600 pages in _____.
5. What is the _____ of your flat? It is about 90 square _____.
6. “Encyclopedia of world literature of _____” was edited by W.B. Fleischmann.
7. The company is willing to sell _____ of its products.
8. What is your _____? – It’s about 60 kilograms.

Ex. 5. Translate sentences. Pay attention to numerals.

*Байкал* – озеро в южной части Восточной Сибири (Eastern Siberia), самое глубокое озеро планеты Земля, крупнейший природный резервуар пресной воды. Возраст озера – 25–35 млн. лет. Озеро окружено со всех сторон горами. Ширина Байкала колеблется от 24 до 79 км. Глубина озера – 1637 м. Длина береговой линии – 2100 км. Запасы воды в Байкале составляют около 19 % мировых запасов пресной воды.

Озеро и прибрежные территории отличаются уникальным разнообразием флоры и фауны. Местные жители и многие в России традиционно называют Байкал морем, а также «жемчужиной Сибири» (the Pearl of Siberia)

В XX веке Байкал был внесён в список объектов Всемирного наследия ЮНЕСКО (UNESCO World Heritage Sites). Защитники окружающей среды выражают протесты против организации на Байкале производства, которое может нанести непоправимый ущерб окружающей среде.

Ex. 6. Complete the dialogue and act it out.

– You are wearing a green T-shirt. Are you a Greenpeace supporter?
– Да, и вся наша группа.
– Oh, I'm pleased to hear that. It's a noble aim to keep the planet green and cities clean, eh?
– Да, но мы понимаем защиту окружающей среды шире, чем просто уборка мусора с улиц и посадка деревьев. Мы должны учитывать все факторы, от которых зависит выживание человека.
– You want everybody to do his or her best in caring for all human beings. Do you mean I am to stop going by car, using sprays, eating food in plastic cans, or wearing a fur coat?
– Так было бы лучше для окружающей среды и в конечном счете для вас.
– Should we reject the progress then?
– Никогда! Но мы должны его контролировать!

## Part 2. ***Why is Environmental Safety Important?***

Current and future generations will confront increasingly severe instances of environmentally induced changes as humankind neglects to maintain the globe's life-supporting eco-systems generating water, food, medicine, and clean air. Misunderstandings of national security may lead to the ecological conflict. Environmental safety affects humankind and its institutions and organizations anywhere and at any time.

Environmental scarcity is determined by environmental change, population size and growth, and unequal distribution of (or access to) resources. Of these factors, unequal access to resources is not bound by physical limits alone. It is also a reflection of societies' preferences, beliefs and norms. The leading examples of emerging environmental change are: depletion and pollution of fresh water supplies, depletion of fisheries, degradation and disappearance of biodiversity, degradation and loss of agriculture lands, food and health safety, stratospheric ozone depletion, and global warming.

The interaction of environmental scarcity determinants sets the stage for addressing the environmental safety challenges.

The basic framework for understanding the relationship between environment and safety is the Millennium Ecosystem Assessment which looks at all the functions of ecosystems and the services they deliver to people and nature. Conceptually, one may make a difference between environmental services and natural resources such as minerals, oil and gas. They also may lead to conflicts – and very often do! But then it is not scarcity, but abundance, and the motives are not need, but greed.

In practice, mining the minerals and exploiting the oil, coal and gas, can lead to serious environmental degradation through pollution, infrastructure, corruption and violent conflicts – in short, to a decrease of environmental safety.

Ex. 1. Give the English equivalents.

Глобальное потепление; исчезновение биологического разнообразия; предоставлять, оказывать услуги; привести к конфликтам; отношения между окружающей средой и безопасностью; вырождение сельскохозяйственных земель; пренебрегать; уменьшение экологической безопасности; определять недостаток; неравное распределение ресурсов; сталкиваться с серьезными изменениями в окружающей среде; рост населения; исчерпание пресной воды; безопасность пищевых продуктов; сохранность здоровья; добыча полезных ископаемых; поддерживать, сохранять жизнеобеспечивающие экосистемы.

Ex. 2. Answer the questions.

1. What is environmental safety determined by?
2. What is the basic framework for understanding the relationship between environment and safety?
3. Why will current and future generations confront increasingly severe instances of environmentally induced changes?
4. What may lead to the ecological conflict?
5. Unequal access to resources is bound by physical limits, isn't it?
6. How can mining the minerals and exploiting the oil, coal and gas lead to the environmental safety decrease?
8. Are the motives of mining natural resources need or greed?
9. What are the chief examples of emerging ecological changes?

Ex. 3. Translate into English.

I. 1. Суда, сбрасывая отходы в океан, загрязняют воду. 2. Рыба в загрязнённой воде погибает или становится ядовитой. 3. Чрезмерное использование земель ведёт к нехватке водных ресурсов. 4. Загрязнение окружающей среды вызывает кислотный дождь, а кислотный дождь нарушает баланс в природе. 5. Люди должны научиться защищать землю, воду и воздух от загрязнения. 6. Окружающая среда – это не неиссякаемый источник ресурсов. 7. Взаимодействие человека и природы неотделимо от истории человечества. 8. Международное сообщество предпринимает меры для охраны водных ресурсов. 9. Машины и фабрики загрязняют воздух и разрушают озоновый слой Земли. 10. Некоторые виды животных и растений находятся на грани исчезновения вследствие деятельности человека. 11. Загрязнение окружающей среды сокращает ресурсы промышленности.

II. Гринпис (Greenpeace) – международная общественная природоохранная организация, основанная в городе Ванкувер (Канада) 15 сентября 1971 года Девидом Мактаггартом.

Основная цель «Гринпис» – добиться решения глобальных экологических проблем. Организация имеет свои офисы в более чем 40 странах. Гринпис занимается такими всемирными вопросами, как глобальное потепление, вырубка лесов, чрезмерный промысел рыбы (overfishing), антиядерными вопросами (anti-nuclear) и др.

*Общество «Друзья земли»* (*Friends of the Earth International)* – сеть международных природоохранных организаций в 76 странах. Общество «Друзья земли» рассматривает такие экологические проблемы, как сохранение лесов и биологического разнообразия (biodiversity); изменение климата; энергоресурсы; защита прав человека и окружающей среды; возмещение (repayment) экологического долга, который богатые страны обязаны выплатить за использование природных ресурсов.

Ex. 4. Complete the dialogue between the correspondent of *the Argumenty & Facty* and the student of our university.

Correspondent: Are you concerned about the wasteful use of resources?

Student: ……..

C.: …….?

S.: Yes, we have air pollution problems in our town.

C.: What is the main cause of bad air quality in your town?

S.: …….

C.: What industries are there near where you live?

S.: …….

C.:…….?

S.: Yes, they pollute much.

C.: It’s a pity, of course.

TEXT 2. ***Environmental Health Efforts***

1. Water and air qualities are the major considerations of environmental health efforts. Human beings need to hydrate and breathe simply to survive; if their air or water is polluted, it increases the risks to public health. Water and air can be polluted due to a variety of factors both human and natural. Chemical runoff from factories can easily lower air quality, but the sniffling and sneezing of millions each spring show that pollen can harm human health as well. By encouraging efforts to clean up water and air and warning the public about

potentially harmful airborne or waterborne particles, public health officials can protect or at least prepare humans for harmful conditions.

2. One of the biggest concerns in the study of environmental health is the effects of radiation on the population. Although it may seem that radiation is usually human-created, it is easy to forget that the sun is an intense radio-active body that most humans are exposed daily. With the thinning of the ozone layer allowing more ultraviolet rays to penetrate into the atmosphere, many experts believe that the sun exposure can be the cause of many kinds of cancer, particularly skin-related cancer. The enormous explosion in radiation-emitting electronic devices is also of concern to environmental health experts, as even small increases in human exposure to radiation can have serious or dangerous results.

3. Public health organizations such as the World Health Organization (WHO) devote much effort to understanding and improving environmental health. In daily life, humans tend to be exposed to a variety of natural and man-made factors that can be dangerous to overall health. By providing information, public health officials can help to create an informed public that is capable of reducing health risks caused by environmental problems.

Ex. 1. Read the text and say if the following statements:

– true
– false
– there is no information in the text

1. Environmental health experts consider electronic devices to be safe.
2. To improve air quality and clean up water purification plants are being built everywhere.
3. Public health officials have to provide public with necessary information concerning health risks.
4. Natural radiation is less hazardous than human-created one.

Ex. 2. Which part of the text (1, 2, 3) does the following information correspond to:

1. Public health organizations take care of making environmental health better.
2. The air and water quality depends on both human and natural factors.
3. People should be warned about harmful conditions.
4. Grave consequences can be caused by radiation.

Ex. 3. Choose the right response to the question: What factors cause the effects of radiation on the population?

– use of electronic devices
– penetration of ultraviolet rays into the atmosphere
– effect in thinning the ozone layer
– human-created and natural factors.

Ex. 4. Define the main idea of the text:

– environmental health efforts are aimed at warning the public about harmful conditions
– environmental health efforts assisted by public health organizations are aimed at understanding, considering and improving environmental health, as well as decreasing health hazards
– environmental health efforts are aimed at reducing health risks caused by environmental problems
– environmental health efforts are aimed at improving water and air qualities.

Ex. 5. Make up a summary of the text according to the plan:

1. The object (purpose) of this paper (extract) is….
2. The paper (article) discusses some problems relating to (deals with some aspects of) ...
3. At the beginning the author points out that…
4. Then the extract goes on to the problem of ...
5. The author concludes that (summarizes) ...
6. In my opinion (To my mind, I think)...
7. The paper (article) is interesting (not interesting), of importance (of little importance), valuable (invaluable), up-to-date (out-of-date), useful (useless), easy (difficult) to read...

TEXT 3. ***David Suzuki***

David Suzuki is an internationally known environmental activist and scientist. Although he is well known for his radio broadcasts in Canada, he' became an international celebrity through the television show *The Nature of Things*. Suzuki also established the David Suzuki Foundation for the promotion of living in balance with the natural world.

David Suzuki was born on March 24, 1936 in Vancouver, Canada to Kaoru Carr and Setsu Suzuki. Suzuki and his twin sister Marcia were grandchildren of Japanese immigrants who came to Canada in the early part of the 20th century. Because of his birth, Suzuki with his family was sent to an internment camp in British Columbia during the Second World War. The family was released at the end of the war.

After finishing his preliminary education, Suzuki left Canada to study at Amherst College in Massachusetts where he earned his Bachelor of Arts, followed by his Ph.D. in zoology from the University of Chicago. He graduated in 1961 and began his career by studying genetics. In 1963 he returned to Canada to teach at the Zoology Department of the British Columbia University. He worked as a professor for almost forty years.

In 1979 Suzuki began working at his most well-known program called *The Nature of Things* to stimulate broader interest in nature, wildlife, and a more sustainable society. In 2002 Suzuki created a mini-series for Canada public television programme called *the Sacred Balance* and continued to promote sustainable practices and respect for nature through his talks and media outlets.

Suzuki established the David Suzuki Foundation to implement a carbon neutral energy program by purchasing carbon offsets from renewable energy and energy efficient projects.

Suzuki remains outspoken about the human involvement in climate change and the society's lack of action to change practices. At times he accused certain scientists of speaking against climate change in order to lobby for oil and energy companies. Although some of his speeches were controversial, Suzuki collected some companies and individuals who shared in his work and beliefs. Suzuki received 16 significant academic awards and over 100 other awards, numerous honorary degrees from over two dozen universities around the world.

*Vocabulary Notes:*

| | |
|---|---|
| radio broadcast | радиопередача |
| celebrity | знаменитый человек |
| establish the foundation | основать фонд |
| promotion | содействие, пропаганда |
| internment camp | лагерь для интернированных лиц |
| be released | освободиться |
| B.A.= Bachelor of Arts BA | бакалавр искусств (бакалавр в области одной из гуманитарных наук в высших учебных заведениях) |
| Ph.D.= Doctor of Philosophy PhD | доктор философии (докторская степень, общая для всех областей знаний; предполагает 3 года обучения на базе магистерской степени и защиту диссертации) |
| stimulate broad interest | стимулировать широкий интерес |
| sustainable society | устойчивое общество |

| | |
|---|---|
| Sacred Balance | название телепередачи букв. «Священное равновесие» |
| media outlets | медиа-вещатели |
| carbon neutral | углеродно-нейтральный |
| carbon offsets | разрешения на выбросы углекислого газа (приобретаются промышленными предприятиями в обязательном порядке) |
| renewable energy | возобновляемые источники энергии |
| outspoken | искренний, прямой |
| involvement | причастность, вовлеченность |
| lack of action | бездействие |
| accuse of | обвинять (в) |
| speak against | высказываться против |
| lobby for | лоббировать = выступать (за) |
| controversial | дискуссионный |
| award | присуждённая награда |
| honorary degree | почётная степень |

Ex. 1. Give the English equivalents.

Выполнять; топливно-энергетические предприятия; фонд; доктор философии; бакалавр гуманитарных наук; выступление в средствах массовой информации; продолжать открыто говорить; живая природа; химическая чистка; энергопотребление с нулевым балансом выбросов углерода; возобновляемый источник энергии; естественное существование; жить в равновесии с; радиопередача; приобретение разрешения на промышленные выбросы углекислого газа; спорный; предварительная подготовка; экологически рациональный; собирать; изменение климата; содействие, поддержка, продвижение; проект по энергосбережению; лагерь для интернированных; знаменитость; освобождать; деятельность.

Ex. 2. Answer the questions.

1. Is David Suzuki a well-known environmental activist and scientist?
2. Where did David Suzuki spend his childhood?
3. What degrees did he get in Massachusetts and Chicago?
4. What career did he begin after graduation?
5. Why did he return to Canada in 1963?
6. How is his most well-known program called?
7. What did David Suzuki create for Canada public television?
8. Why has he accused certain scientists of speaking against climate change?
9. What is the David Suzuki Foundation activity aimed at?
10. Why has David Suzuki become an international celebrity?

Ex. 3. Complete the dialogue:

– I have recently come across some interesting name. Have you ever heard of David Suzuki?
– …….. .
– ……. . ?
– Yes, but he is known not only for his radio broadcasts in Canada. His television show *The Nature of Things* is also very popular.
– Do you know anything of David Suzuki Foundation?
– ……. .

Ex. 4. Answer the following questions.
1. Do you know any other famous scientist in the field of interest?
1. What is he / she famous for?
2. What are you personally interested in?
3. Would you like to carry out scientific research? Why?
4. What do you want to achieve in your profession?
5. How do you shape your future? Give a short message of 3-4 sentences.

Ex. 5. Fill in the gaps with the international standard units and the names of famous scientists in memory of whom they were named.

| International Standard Units | Scientists |
|---|---|
| walt, roentgen, kelvin, Celsius, curie, pascal, ohm, watt, newton, amp, hertz, volt | James Joule, James Watt, George Ohm, Isaac Newton, Blaise Pascal, Wilhelm Röntgen, Alessandro Volta |

1. A _____is a unit of radioactivity. It's named after _____ a Polish-born chemist who discovered radioactivity in several elements.
2. A _____is a unit of force. It's named after _____ an English scientist.
3. _____ is a temperature scale with the freezing point of water being 0°C and the boiling point being 100°C. The scale was developed by a Swedish astronomer _____.
4. A ____is a unit of pressure equal to one newton per square meter. It's named after _____ a French scientist.
5. A _____is a unit of electric force. It's named after _____, an Italian physicist and pioneer in study of electricity.
6. A _____is a unit of electric current. It's named after _____, a French mathematician and physicist, a pioneer in electrodynamics.
7. An _____a unit of electric resistance named after _____ a German physicist.
8. A _____is frequency equal to one cycle per second. It's named after _____ a German physicist.

9. A _____ is a unit of ionizing radiation (X-ray and gamma-ray emission) named after Wilhelm Conrad Röntgen (1845–1923), German physicist.
10. A _____is an amount of electric power. It is equal to one joule per second. It's named after _____, a Scottish engineer and inventor.
11. A _____is a unit of energy named after _____ a British physicist.

## ***Grammar Revision***

*(неличные формы глагола (обзор), степени сравнения прилагательных, сравнительные конструкции)*

*1. Translate sentences. Pay attention to non-finite forms.*

1. The poisoning of land, air and water leads to the dangerous illnesses of civilization. 2. When poisoning land, air and water people must think of the dangerous consequences. 3. Overpopulation, pollution, energy consumption is known to have created massive deforestation, ozone holes and acid rains. 4. The global warming is believed to be caused by the greenhouse effect. 5. Environmental protection is certain to be a very serious problem. 6. The tragic consequences of the Chernobyl disaster must have become one of the serious questions of the conference. 7. Nuclear power stations seem to be a great environmental threat. 8. We know industrial enterprises to emit tons of harmful substances. 9. The seas reported to be in danger are filled with poison. 10. Once started, the pollution of air and water is difficult to stop. 11. Over the next 100 years, one third of current global land cover will be transformed, with the world facing increasingly hard choices among consumption, ecosystem services, restoration, and conservation. 12. The examples of emerging environmental changes are: depletion and pollution of fresh water supplies, depletion of fisheries, and disappearance of biodiversity. 13. Public health organizations do their best for environmental health to be improved. 14. Human economic activity may have resulted in global climatic and environmental changes, with changes in agricultural output being among them. 15. The resource availability altered will imply food shortages causing political disputes, ethnic tension, and civil unrest. 16. To solve ecological problems concerning air and water pollution purification plants should have been built in all industrial zones. 17. The identification of rock and material resources should be made for the future generations to be provided with needed raw materials, or of appropriate substitute ones.

*2. Revise the rule of degrees of comparison of adjectives and adverbs and finish the sentences.*

1. This jacket is too small. I need a … size. (large)
2. You look … Have you lost weight? (thin)
3. He is not so keen on his studies. He's … in having a good time. (interested)
4. You will find your way around the town … if you have a map. (easily)
5. She has … merits than her sister. (many)
6. You are making too much noise. Can you be a bit … ? (quiet)
7. There were a lot of people on the bus. It was … than usual. (crowded)
8. You are late. I expected you … . (early)
9. You hardly ever write to me. Why don't you write a bit … often? (much)
10. The hotel was surprisingly cheap. I thought it would be … . (expensive)
11. It's a pity you live so far away. I wish you lived … . (near)
12. People should eat … fat to reduce the risk of heart disease. (little)
13. I know him … than her. (good)

*3. Translate sentences. Pay attention to constructions: as ... as; not so / as ... as; the ...the ... ; much more ...; twice as ... as.*

1. This saving instinct is as internal as that one. 2. There is much more to your success than luck. 3. This theme is as difficult as mine. 4. The problem is not so simple as it seems. 5. Her tutor is not as strict as ours. 6. I'll get back as quick as I can. 7. Your workplace is twice as large as mine. 8. This box is three times as heavy as that one. 9. Moscow is half as big as New York. 10. The more you have, the more you want. 11. The longer I stay here, the better I like it. 12. The Russian language is much more difficult than English. 13. Mineral resources management is much more complex now. 14. The fewer mistakes you make in the test, the higher grade you get. 15. A house in the city costs twice as much as a house in the countryside.

## UNIT VI. MY FUTURE CAREER AND PROFESSIONAL COMMUNICATION

*Study the Vocabulary*

commodity production [kə'mɒdıtı prə'dʌkʃən] товарное производство
favourable ['feıvərəb(ə)l, 'feıvrə-] *adj* благоприятный
disaster consequences [dı'zɑ:stə 'kɔnsikwənsız] последствие катастрофы, бедствия
engineering system fail-safety and anthropogenic risk [ˌɛndʒı'nıərıŋ 'sıstəm ˌfeıl'seıftı ənd ˌænθrəpəʊ'dʒɛnık rɪ̱sk] надежность технических систем и техногенный риск

ensure [ɪn'ʃʊə] *v* обеспечивать
fluid and gas dynamics ['fluːɪd ənd gæs daɪ'næmɪks] гидрогазодинамика
foresee [fɔː'siː] *v* (foresaw, foreseen) предвидеть, прогнозировать = to anticipate [æntɪsɪpeɪt]; = to forecast ['fɔːˌkɑːst]
government control supervisor [ˈgəvər(n)mənt kəntroʊl 'suːpəˌvaɪzə] инспектор государственного надзора и контроля
impact ['ɪmpækt] *n* воздействие
hazardous ['hæzədəs] *adj* опасный
implement ['ɪmplɪmənt] *v* выполнять, осуществлять
industrial safety engineer [ɪn'dʌstrɪəl 'seɪftɪ ˌɛndʒɪ'nɪə] инженер по промышленной безопасности
injury ['ɪndʒərɪ] *n* травма
labour protection engineer ['leɪbə prə'tɛkʃənˌɛndʒɪ'nɪə] инженер по охране труда
participate [pɑː'tɪsɪˌpeɪt] *v* участвовать
premise ['premɪs] *n* помещение, здание
risk assessment [rɪsk ə'sɛsmənt] оценка риска
analyst ['ænəlɪst] *n* аналитик безопасности и рисков
standardization [ˌstændədaɪ'zeɪʃ(ə)n] *n* стандартизация
sustainability [səˌsteɪnə'bɪlətɪ] *n* разумное использование ресурсов
technical supervision engineer ['teknɪk(ə)l ˌs(j)uːpə'vɪʒ(ə)nˌɛndʒɪ'nɪə] инженер по техническому надзору
technosphere safety control ['tɛknəʊˌsfɪə 'seɪftɪ kən'trəʊl] управление техносферной безопасностью
thermal physics ['θɜːməl 'fɪzɪks] *n* теплофизика

## TEXT 1. ***My Speciality: Safety Engineering***

I am a second year student of the Nature Management and Engineering Ecology Department of Tver State Technical University. My speciality is safety engineering which is aimed at protecting people, property and environment.

Safety engineers perform safe operations in commodity production management, technological processes and manufactures planning in large industrial enterprises. No project can be effectively implemented without risk assessment of hazardous production factors.

One of the main tasks of safety engineers is to create favorable conditions for exploiting technical equipment with maximum efficiency on the one hand, and to foresee and prevent damages, injuries caused by equipment operation, on the other hand. Safety engineers have to ensure safety control in the workplaces, to anticipate all the factors affecting people’s mind and health from premises illumination, computer radiation to automatic machine vibration. Some safety engineers are exclusively specialized in the field of computer use.

Safety engineering refers to emergency situations, fire safety as well.

Professional functions of safety engineers are:

- to detect a source of danger at the factories;
- to ensure safety and sustainability in technological projects;
- to forecast and control harmful environmental impact;
- to liquidate fire effects, disaster consequences in emergency situations;
- to participate in designing any technological equipment;
- to develop up-to-date technologies and methods of protecting nation, economy, habitat;
- to draw up safety instruction;

At the University we study a lot of various subjects which will be necessary in our future profession. Along with general subjects students study special subjects such as fluid and gas dynamics, mechanics, thermal physics, descriptive geometry, engineering graphics, medical and biological principles of safety, metrology, standartization and certification, engineering system failsafety and anthropogenic risk, technosphere safety control, electronics and electrical engineering. Much attention is paid to practical training.

After graduation we can work as safety and hazards analysts, labour protection engineers, fire safety engineers, industrial safety engineers, safety procedure engineers, ecological safety engineers, technical supervision engineers, government control supervisors, ecological safety experts in different places such as the underground, railway companies, airlines, expert and project organizations, corporations manufacturing technical equipment, industrial enterprises, large organizations, the Ministry of Emergency Situations.

I consider my future profession very important and urgent nowadays. That is why I have chosen such a speciality.

Ex. 1. Suggest the English equivalents.

Компании, производящие технику; воздействовать на психику и здоровье людей; составлять инструкцию по безопасности; начертательная геометрия; уделять большое внимание практике; инженерная графика; прогнозировать; технический надзор; надёжность технических систем; охрана труда; освещённость помещения; современные технологии; направленный на; промышленное предприятие; МЧС; создавать благоприятные условия; рабочие места; проектировать технологическое оборудование; чрезвычайные ситуации; источник опасности.

Ex. 2. Answer the questions.

1. What department do you study at? And what is your future profession?
2. Why did you choose this major?
3. What is safety engineering aimed at?
4. What are professional functions of safety engineers?
5. What is one of the main tasks of safety engineers working in industrial enterprises?
6. What types of safety engineering specialists do you know?
7. What should be taken into account in developing a technological project?
8. Safety engineering refers to fire safety, doesn't it?
9. What special subjects do students study?
10. What do you parents want you to be? Do they approve your choice?
11. Do you believe to have enough talents and qualities for your future profession?
12. Where will you be able to work after graduation?
13. What do you think about the future prospects for your speciality?
14. Would you like to work in the Ministry of Emergency Situations?

Ex. 3. Translate the dialogue into English and act it out.

– Привет, ……., что ты здесь делаешь?
– Привет, ……., я жду друга.
– Я слышал, что ты заканчиваешь учебу этим летом. Это правда?
– Да. Если все будет хорошо, я получу степень бакалавра в августе. Потом мне надо начать поиски работы.
– Я занимался этим в прошлом году. Это было нелегко. У тебя есть какие-либо предложения со стороны работодателей?
– Нет, еще нет. Я разослал несколько резюме, но не получил ответных писем. Сейчас очень трудно найти работу.
– Какая у тебя специализация?
– Инженер по технике безопасности.
– А моя специализация – проектирование дорог (traffic engineering).
– Я думаю, инженерам легче найти работу.
– Я не уверен насчет этого. Мне потребовалось 3 месяца, чтобы найти работу. В конце концов, я получил работу, когда разместил свое резюме на одном из сайтов по поиску работы.
– Тем не менее, это не играет большой роли. Если я не смогу найти работу, наверное, поступлю в магистратуру (magistracy ['mædʒıstrəsı] магистратура).

TEXT 2. ***The Art of Job Application***

*Summarize the main idea of the story in 5-8 sentences. What useful information did you find in the text?*

by Kate Turner

Now is the time when students eagerly await for the phone call of whether they have got a contract. To have a contract it is necessary to write an application letter properly and to be successful at an interview. Rather late, I wrote 28 applications for contracts. Most firms stopped accepting applications by September, so I could write only to those few whose deadlines had not passed, or whom I hoped to persuade to make an exception.

Small firms get as many, or more, applications than the major firms. For example, Ecological Survey Solutions Ltd*, which takes on only one trainee per year, has had about 2,000 applications, the same number as GreenLink Ecology Ltd, the largest firm, with 120 places to offer.

Lisa Salony, employment manager, says that the high numbers of the applying do not surprise her because the firm is high profile and works in a sought-after area – health, safety & environment law. Ms. Salony says she rejects anyone who has illegible writing and letters longer than one page. She looks for people with professional experience rather than those straight out of college.

Peter Bloom of GreenLink Ecology Ltd which had 400 applications for two places looks for something distinctive in the application which must be well written. The worst ones might say: "Do not bin this; I'm desperate for a job". Others are too knowing and might say: "Everyone on planet Earth has told me that you are the only firm worth applying to", but when asked who recommended the firm, they cannot answer.

Some recruitment administrators say they look for good academic qualifications and responsibility, such as running the University Greenpeace Society or being captain of a basketball team. It could be anything from a sports team to a choir. Conversely, a person's hobbies may indicate that he or she is a loner, not a leader. The long, complex application forms favoured by some of the larger firms do not deter many applicants despite the big blank spaces left for questions such as "Why do you want to work for us?" and "What are your greatest achievements to date?", "What experience was the most rewarding and why?".

Some interviewers make the applicants state their "principal interest and leisure activities" and how they benefit from them.

In response to my 28 applications I have had six acknowledgments, four letters saying I am too late, five rejections and two invitations for interviews – one for a major firm and one for a small, specialist firm.

*Ltd является сокращением от "private limited company"

*Vocabulary Notes:*

| | | | |
|---|---|---|---|
| eagerly | с нетерпением | | |
| application letter | сопроводительное письмо при приёме на работу | to reject | отвергать, отклонять |
| | | illegible writing | неразборчивый почерк |
| successful | успешный | | |
| deadline | предельный срок | straight | прямой, непосредственный |
| to persuade | убеждать | | |
| exception | исключение | distinctive | отличительный |
| trainee [treɪ'niː] | стажёр | to be worth | стоить, заслуживать |
| employment manager | менеджер по найму персонала | conversely | наоборот |
| to apply | подавать заявление | to favoure | одобрять |
| | | to deter | отпугивать |
| sought-after | пользующийся спросом | achievement | достижение |
| | | acknowledgment | подтверждение |

TEXT 3. ***Job Interview***

When a job is advertised, there are often a lot of people interested in applying. Sometimes a company receives hundreds of resumes for a single job opening. The job interview, therefore, is very important.

Because job interviews are so critical, some job hunters read books or take courses to help them make a good first impression. These books are full of advice to help job applicants prepare for their interviews. For example, successful applicants dress appropriately and have a clean and neat appearance. They take their resume with them to the interview. They are to prepare questions about the job or the company. They go to the interview alone and are always on time.

At the beginning of the interview the applicant shakes hands firmly with the employer. The employer usually invites the applicant to sit down. During the interview it is correct to smile often and to look directly into the eyes of the interviewer. The applicant doesn't chew gum or smoke during the interview. The applicant should be prepared to answer questions about education and previous jobs. More difficult questions are possible, such as "Why did you leave your last position?" They ask questions about applicant's personal background, family, and hobbies. Interviewers expect applicants to talk profoundly, confidently, and fully about their work experience, skills, goals, and abilities. When the interview is over, the applicant stands up, shakes hands with the interviewer(s), and says thank you for the time spent.

Job applicants who can show they are capable, well-prepared, punctual, polite, and honest have a better chance of getting the job they are looking for.

Vocabulary Notes:

| | |
|---|---|
| advertise | рекламировать |
| resume ['rezju:meɪ] | резюме |
| appropriately | подходящим образом |
| neat appearance | безукоризненный внешний вид |
| shake hands | здороваться за руку |
| chew gum | жевать резинку |
| background | происхождение, биографические данные |
| profoundly | глубоко |
| confidently | уверенно |
| ability | способность |
| be capable | быть способным сделать что-либо |
| punctual ['pʌŋktjʊəl] | пунктуальный |
| polite | вежливый |
| honest | честный |

Ex. 1. Answer the questions on the text.
1. What is taken into consideration in a job interview?
2. How can you be competitive with other job-seekers in your field?
3. Do you think there is association between an individual's nature, appearance and occupation?
4. What do interviewers usually ask applicants in a job interview?
5. What do interviewers expect from applicants?
6. Who has the best chance of getting the job?

Ex. 2. You are interviewed by the representative of the company. Please, answer his questions.
Representative of the company: Why are you interested in joining our company?

You: …….
R.: What are you by profession?
Y.: …….
R.: What is your professional experience?
Y.: …….
R.: What do you know about this company?
Y.: …….
R.: What kind of position do you want?

Y.: …….
R.: What is your marital status?
Y.: …….
R.: What are your main strengths for this job?
Y.: …….
R.: Will you agree to begin with a part-time job?
Y.: …….
R.: What is your objective? What kind of position do you want in the future?
Y.:…….

Ex. 3. Prepare questions you may wish to ask:

| | |
|---|---|
| *Organisation* | *Colleagues* |
| Major current projects | Who would you work with |
| Future development projects | |
| *Work* | *Salary* |
| Responsibilities and obligations | Chances of progression |
| Typical work timescales | Net and gross salary |
| Variety of work | Other benefits |
| To whom to report | |
| Location | *Training* |
| The place to be based | Training offered |
| How much travel/mobility | Help with professional qualifications |

Ex. 4. Read the following advice how to make successful career and add some of your own.

1. Set goals and strive to reach them by specific deadline dates.

2. Learn to listen. Instead of rushing headlong into a project be professional enough to listen to instructions carefully and to heed the advice of others.

3. Learn to say "no" without feeling guilty. Instead of punishing yourself for wasting time give yourself reward each time you manage your time wisely.

4. Avoid meetings whenever possible. If you must have a meeting, prepare a specific agenda ahead of time and stick to it.

5. Make up a daily schedule before going to bed. Stick to your plan every day.

6. Link errands together. Instead of four trips a day, go out just once.

7. Learn from your mistakes and don't repeat them.

8. Anticipate change, prepare for it and adapt quickly when it comes.

9. Learn to make a decision – to lead, to follow or to get out of the way.

Ex. 5. Read and translate this application letter and curriculum vitae and make your own variant. Mind the rules of making up the letter.

20, Bright Street
Edinburgh
May 24, 2014

Lancall Limited
Warrington Business Park
Long Lane
Warrington, WA2 8TX
England

Dear Sirs,

In reply to your advertisement in today's "The Daily Telegraph" I am interested in becoming a Health and Safety Advisor for your company.

As you can see from the enclosed curriculum vitae, I have some previous experience in various and very competitive fields of fire risk assessments, health and safety consultancy. However, I would like to change to installing fire detection systems, fire fighting and alarm systems, implementing post accident investigation since I believe this can offer a greater potential to me. Your six months training scheme should, certainly, help me to devote my ability to your company particularly since my educational qualifications are higher than those you require.

I thank you for considering my application. I'm looking forward to a face-to-face meeting.

Yours faithfully

(signature)

Edward J. Westcott

Enc. Curriculum Vitae [kə'rɪkjʊləm 'viːtaɪ, / 'vaɪtiː]:

| | |
|---|---|
| Name: | Edward J. Westcott |
| Home address | 20, Bright St<br>Edinburgh 48104<br>UK<br>Mobile Phone +44 131 694 0921<br>Prior Work Phone +44 131 975 3542 (mornings) |
| Experience | 2010 / 2012 Fire safety engineer of Fuse Recruitment, London |

| | |
|---|---|
| Prior Education | 1. B.A., Fire Safety Engineering Technology, College Crunch, 2001<br>2. M.A., Fire Safety Engineering, The University of Edinburgh, 2006 |

Ex. 6. Read and translate one more letter of application. Make up similar one of your own.

To whom it may concern:

I venture to write you to inquire whether your Department may allow me a post-graduate course this year.

I am a graduate of the University of Alabama at Birmingham where I specialized in safety engineering.

I enclose my data sheet and two references, I should be glad if you could consider my application.

Yours faithfully … .

Ex. 7. Say what kind of business information the stated below fragments refer to:

– CV
– Contract
– Letter of apology
– Letter of complaint.

1) ……..

I am writing in connection with the above invoice for fire equipment. We received fire hoses yesterday.

Unfortunately, the delivery couplings are missing.

We would be very grateful if you could send one as soon as possible.
…….

* delivery coupling соединительная головка на напорном пожарном рукаве
* fire hose пожарный шланг; пожарный рукав

2)……

I have enclosed my resume, and I would like to schedule an interview. I'll call you next week.

I look forward to meeting you.

…….

Ex. 8. Remember the sender's and addressee's layout on the envelope.

Марка

Имя и фамилия ***отправителя,***
номер квартиры, дома,
название улицы,
город, штат, почтовый индекс,
страна

Имя и фамилия ***получателя,***
номер квартиры, дома, название улицы,
город, штат, почтовый индекс,
страна

Ex. 9. Correlate the enumerated information on the envelope with the explanation under it.

(1) Design Plus, Co
55 (2) Stevenson Road
(3) San Francisco, CA 94015

(4) Mr. P.T. Vitale
(5) Mutual Insurance Company
33 South Street
New York, (6) NY 3476

_____ the street name in the return address
_____the town the letter comes from
_____the sender's name
_____the addressee
_____the addressee's company name
_____the ZIP Code in the mailing address

## UNIT VII. TEST YOURSELF

1. School vocabulary

Fill the gap:

Although each school in England decides its own _____, they must include certain compulsory subjects.

a) education b) curriculum c) program d) academic training

2. Practical vocabulary
Fill the gap:
I'd like to _____ Lisa, our sales manager.
a) introduce b) assist c) visit d) meet

3. Professional vocabulary
Fill the gap:
The basic function of a computer is to _____ information.
a) process b) store c) feed d) carry out

4. Terminology / definitions
Fill the gap:
A material that allows electricity to pass through is called _____.
a) conductor b) isolator c) conductivity d) liquid

5. Word-building
Fill the gap:
Many parents complain of their children's _____, but probably they were the same.
a) obedient b) obey c) obedience d) disobedience

6. Pronouns
Fill the gap:
When Anna got paid she bought _____ some new clothes.
a) herself b) hers c) her d) she
7. Degrees of comparison of adjectives
Fill the gap:
The younger you are, _____ it is to learn.
a) the easier b) easyer c) the easiest d) more easier

8. Articles
Fill the gap:
To tell _____ truth, I didn't expect to see him.
a) the b) an c) a d) –

9. Prepositions
Fill the gap:
Where is Jane? I'm tired _____ waiting.
a) of b) with c) about d) at

10. Conjunctions
Fill the gap:
Always keep your goals in mind _____ you start a new activity.
a) although b) as c) while d) as long as

11. Tense forms of the verb
Fill the gap:
The Prime Minister's Election _____ soon.
a) will hold b) will be held c) held d) will held

12. Non-finite forms
Fill the gap:
While _____ this article he came across many difficulties.
a) translating b) being translating c) to be translating d) having translated

13. Phrasal verbs
Fill the gap:
At last he decided to _____ smoking.
a) give in b) give away c) give off d) give up

16. Modal verbs
Fill the gap:
You _____ do it today. You can do it tomorrow morning.
a) shouldn't b) needn't c) mustn't d) can't

17. Speech etiquette / life-style sphere
Choose the statement appropriate to the situation:
Friend: " _____"
You: "OK, see you".
a) Would you excuse me, please? It's time I was going off. Good-bye.
b) Can I talk to you?
c) I'm afraid I must be going now. Good-bye.
d) Well. I must be off now. Bye.

18. Professional practical sphere
Choose the statement appropriate to the situation:
Mr Hill: "Good morning. I have an appointment with Mr James"
Receptionist: " _____"
a) Good morning. What can I do for you?
b) Please take a sit for a moment, sir. I'll tell Mr James you are here.
c) Mr Jones is in conference just now. He'll be free soon.
d) Good morning. I'm happy to see you. How are you?

19. Speech etiquette / school social sphere
Choose the statement appropriate to the situation:
Student: “Shall I read the text again for the next time?”
Teacher: “_____”
a) It’s out of the question.
b) Yes, of course.
c) Nothing of the kind.
d) You seem to know better.

20. Speech etiquette / social practical sphere
Choose the statement appropriate to the situation:
Boris: “Give me 100 first class stamps, please.”
Clerk: “_____”
a) Take them. Anything else?
b) With pleasure. 25 dollars.
c) Here you are. That will be 25 dollars.
d) Can I help you?

21. Culture and traditions / Great Britain
Fill the gap:
The national holiday which takes place each year on the official birthday of Queen Elizabeth II marked by a military parade and march-past is called _____.
a) Remembrance Day
b) Trooping of the colour
c) St.George’s Day
d) St. Patrick’s Day

20. Culture and traditions / The USA
Fill the gap:
Wall Street, the symbol of the US financial power, is located in _____ .
a) Chicago b) Los Angeles c) Washington d) New York

21. Culture and traditions / Canada
Fill the gap:
Gilles Vigneault’s words “My country isn’t a country, it is winter” are about _____.
a) Iceland b) America c) Norway d) Canada

22. Culture and traditions / outstanding people
Fill the gap:
An English writer, poet, philologist, and university professor, best known as the author of the classic fantasy works *The Hobbit*, *The Lord of the Rings* and *The*

*Silmarillion* is _____.
a) Charles John Huffam Dickens
b) John Ronald Reuel Tolkien
c) Walter Scott
d) Geoffrey Chaucer

Reading
*Read the text and do assignments*

TEXT. A MICROWAVE OVEN

1. A microwave oven works by passing non-ionizing microwave radiation, usually at a frequency of 2.45 gigahertz (a wave length of 12.24 centimetres), through the food. Microwave radiation is between common radio and infrared frequencies. Water, fat, and other substances in the food absorb energy from the microwaves in a process called dielectric heating.

2. Many molecules (such as those of water) are electric dipoles, meaning that they have a positive charge at one end and a negative charge at the other, and therefore rotate as they try to align themselves with the alternating electromagnetic field of the microwaves. This molecular movement represents heat which is then dispersed as the rotating molecules hit other molecules and put them into motion.

3. Microwave heating is more efficient on liquid water than on fats and sugars (which have a smaller molecular dipole movement), and also more efficient than on frozen water (where the molecules are not free to rotate). Microwave heating is sometimes explained as a resonance of water molecules, but this is incorrect: such resonance only occurs in water vapor at much higher frequencies, at about 20 GHz.

4. A common misconception is microwave ovens cook food from the "inside out". In reality, microwaves are absorbed in the outer layers of food in a manner somewhat similar to heat from other methods. The misconception arises because microwaves penetrate dry non-conductive substances at the surfaces of many common foods, and thus often induce initial heat more deeply than other methods. Depending on water content, the depth of initial heat deposition may be several centimetres or more with microwave ovens, in contrast to infrared or convection heating, which deposit heat thinly at the food surface. Penetration depth of microwaves is dependent on food composition and the frequency, with lower microwave frequencies (longer wavelengths) penetrating better.

*(from Encyclopedia Britannica)*

23. Read the text and identify what statement is appropriate to the context:
a) Dielectric heating is the process of giving off microwave energy from food substances.
b) Microwave heating can be explained as a resonance of water molecules.
c) Microwave heating is more efficient on liquids with higher density.
d) It is stated that food composition and the frequency influence microwave penetration depth.

24. The same text, identify what statement is not appropriate to the context:
a) The work of microwave ovens is usually carried out at a certain frequency.
b) The longer the microwaves are the better penetration depth.
c) Heat is the result of molecular movement.
d) Microwave heating methods differ from other heating methods.

25. Choose the correct response to the question: What is the peculiarity of heat penetration with microwaves?
a) Microwaves penetrate dry non-conductive substances at the surfaces of food more deeply.
b) Penetration depth of microwaves is dependent on food composition and the frequency.
c) Microwave heating is more efficient on liquid water than on fats, sugars and ice.
d) Food substances absorb energy from the microwaves.

26. Which part of the text (1, 2, 3, 4) describes the principle of microwave oven heating?

27. Which part of the text (1, 2, 3, 4) does the following idea correspond to? – *Water affects the depth of microwave heating penetration*.

28. Define the main idea of the text:
a) Food substances absorb energy from the microwaves in a process called dielectric heating.
b) Microwave is a modern, high quality device developed on contemporary achievements of science used for food preparation.
c) Penetration depth of microwaves depends on food staff and the frequency.
d) The work of microwaves ovens is usually carried out at a certain frequency.

29. Writing / Business Letter
Put the parts of the business letter in the right order:

| | |
|---|---|
| | Yours sincerely |
| | Dear Mr Morrison, |
| | 67, Upper Thames Street,<br>London, EC 4 V 3 AH |
| | Unfortunately, we have not yet received the computers "OPTIMA 133" which were a part of this order. We would be grateful if you could deliver these as soon as possible or refund our money. |
| | D. Barker<br>Manager |
| | May 17, 2013 |
| | Mr R. Morrison<br>P. Marlow& CO LTD<br>21, Bird Street<br>London E1 6 TM |

30. Writing / Envelope Form
Correlate the enumerated information on the envelope to the explanation under it:

(1) Jackson Brothers
2520 Visita Avenue
(2) Olympia, WA 98501
(3) USA

John Wilson
(4) 4 New High Street
(5) Oxford, OX37AQ
(6) England

_____ the town the letter comes from
_____ the sender
_____ the addressee's house number
_____ the country in the mailing address
_____ the town in the mailing address
_____ the country the letter comes from

31. Writing / Types of documents

Define what kind of business information the stated below fragment refers to:

……

With reference to your advertisement in yesterday's "New York Times", could you please send me a copy of your latest catalogue.
I would also like to know if it is possible to make purchases online...

……

a) Inquiry Letter
b) Cover Letter
c) Resume
d) Advertising Letter

32. Writing / memo, e-mail, fax, agenda Fill the gaps:

(1) ____
Heads of Departments
From : Stella Jones, PR Director
Subject : (2) _____
Date : 14 February, 2014

As you know, the Public Relations Department has been looking into ways to make our company logo more attractive and easily recognizable by customers.

Could you please take the following actions in your departments?

1. Encourage staff to share their personal vision of a new logo, which will be used on all our products and in ads.

2. Ask staff to put their drawings or descriptions in the box placed in the lobby downstairs.

3. Inform staff that the best drafts will get special gifts.

Please contact the (3) _____ if you or anyone in your department has any further suggestions.

(4)_____.

_____New company logo
_____To
_____PR Department
_____Stella J.

## VIII. SUPPLEMENTARY TEXTS

(for self-guided work)

### *1. TECHNOSPHERE AND MEGALOPOLIS ENVIRONMENTAL SAFETY*

Technological progress rapid growth and megalopolis formation resulted in new problems concerned with technosphere development. It is directly connected with ecological disturbance of the environment. For successful restoration of the megalopolis environment balance it is necessary to define the most dangerous contaminating factors, elimination of which gives the best effect, as well as indicate the actual problems of megalopolis ecosphere security.

Systematic analysis of ecologic situation shows that the most considerable contribution to the pollution of human environment in a megalopolis is made by specific gas emitted by automobiles, plants, living territories polluted by hard domestic wastes and constantly generating toxic gas emissions. This ecologic balance disturbances result in toxic chemical substances and synthesis of dangerous biologic agents leading to poisoning of water, soil, food and creating the conditions for pathologically accelerated population ageing.

Megalopolis environment restoration requires determination of the major negative factors, elimination of which effectively reduces ecologic danger. One of the common factors, poisoning megalopolis environment is atmosphere pollution

(1104 pr. characters)

### *2. ELIMINATING INTERNATIONAL POLLUTANTS*

At the third round of talks on persistent organic pollutants (POPs), 420 representatives agreed on proposals to eliminate 10 intentionally produced POPs. The actions were in response to a mandate for a treaty from the governing council of the United Nations Environment Programme. The participants also exempted some uses of DDT because of its public health benefit in controlling vector-borne diseases, such as malaria. The proposals will go to a fourth round in Bonn next March, after consideration from participating nations. POPs slated for elimination without exemption are the pesticides aldrine, endrine, and toxaphene. Negotiators also agreed on scientific criteria for evaluating additional pollutants. Despite the controversial DDT response, Klaus Toepfer, executive director of UNEP, said that “concrete proposals were put forth to bring about an end to some of the worst pollutants of the 20th century.” He also called the DDT exemption “a win-win” situation. Stricken areas will be protected, while DDT use will be minimized until its final phase-out. The World Health Organization is also committed to reducing reliance on DDT while fully protecting public health. Other controversies exist, however. Even as some toxic chemicals are being phased out, others are being introduced.

(1134 pr. characters)

*3. SMALL BUSINESSES AND INDUSTRIAL SAFETY*

All companies, including small businesses, are required to keep records on various aspects of their operations that are relevant to employee safety and health. All employers covered by the Act of OSH (Occupational Safety and Health ) are required to keep records regarding enforcement of OSHA standards; research records; job-related injury, illness, and death records; and job hazard records.

But while small businesses must adhere to many of the same regulations that govern the operations or larger companies, there also are several federal industrial safety programs available exclusively to smaller business enterprises, and OSHA OSH (Occupational Safety and Health Administration) and state regulatory agencies both enjoy some discretion in adjusting penalties for industrial safety violations for small companies. For example, OSHA has discretion to grant monetary penalty reductions of up to 60 % for businesses that qualify as small firms. It also gives smaller firms greater flexibility in certain safety areas (lead in construction, emergency evacuation plans, process safety management) in recognition of their limited resources, and provides grants to nonprofit groups with mandates of addressing safety and health issues in small business settings.

(1113 pr. characters)

*4. LEADED LIGHT*

Some candles are dangerous to health, according to Jerome Nriagu, a professor of environmental health sciences at the University of Michigan. When Nriagu examined lead* emissions from 15 brands of candles made in the United States, Mexico, and China, he found that some candles have wicks with lead or lead cores that emit potentially dangerous levels of lead into the air that accumulate in closed spaces as they burn. Candles produced in China and the United States released the highest levels of lead. “Lead poisoning remains one of the most serious environmental health diseases in this country and other parts of the world. It affects many organ systems and biochemical processes,” said Nriagu. Studies show that children’s central nervous systems are particularly sensitive to lead; moreover, its effects are believed to be irreversible. Nriagu’s study, conducted in the University of Michigan’s School of Public Health, showed that lead emissions for the candles ranged between 0.5 and 327 micrograms an hour. After burning the candle for one hour, the lead levels in the air of the enclosed test space were estimated to range from 0.04 to 13.1 micrograms per cubic meter, compared with the U.S. Environmental Protection Agency recommendation of 1.5 micrograms per cubic meter for ambient air.

*lead [led] - свинец

(1104 pr. characters)

*5. INDUSTRIAL SAFETY TRAINING*

Industrial Safety Training provides the core concepts of safety awareness in the industrial workplace.

With an emphasis on each trainee's role and responsibility in developing more complete knowledge of, and appreciation for, workplace safety, the industrial safety training program provides employees with specific procedures for handling various materials, operating different kinds of machinery, and performing various tasks safely while at the same time ensuring maximum organizational productivity.

The highly adaptable Industrial Safety Training program helps your employees to:

- Select proper protective clothing to safeguard eyes, ears, skin, and mouth within the workplace.
- Demonstrate proper practice to avoid the most common kinds of accidents.
- State the correct practice to follow to avoid electric shock when using electric tools.
- Demonstrate safe practice when using common types of ladders and scaffolding.
- State the key points for the safe use of powered industrial trucks, and for both gravity and powered conveyers.
- Describe procedures for the treatment of electric shock.

(966 pr. characters)

*6. INDUSTRIAL SAFETY LAW & LEGAL DEFINITION*

The discussion of industrial safety began to shift in the 1970s from one concerned primarily with compensation issues to one concerned with prevention and with the study of long-term effects of occupational hazards. This shift was encouraged by insurance companies which found that it was a good business for them to promote industrial safety programs and research industrial safety issues. Today industrial safety is widely regarded as one of the most important factors that any business, large or small, must consider in its operations.

Worker's compensation laws vary widely from state to state but have key objectives in common. Employers are required to compensate employees for work-related injuries or sickness by paying medical expenses, disability benefits, and compensation for lost work time. In return, workers are barred in many instances from suing their employers, a provision that protects employers

from large liability settlements (of course, employers may still be found liable in instances where they are found guilty of neglect or other legal violations).

The facts can often be very uncomfortable and relate to such safety issues as mediocre management systems or questionable business ethics.

(1066 pr. characters)

*7. TYPES OF HAND HAZARDS*

Many hazards exist which your hands should be protected from. These hazards might be well known such as a sharp object, or less obvious such as a chemical. The type of hazards industrial work gloves might be subjected to can be grouped together into chemical, mechanical, or thermal hazards.

A mechanical hazard will occur more often in the manufacturing or construction industry. Safety work gloves, for example the Mechanix gloves, will be needed to offer hand protection during lifting, cutting, or handling machinery.

Chemical hazards are a problem regardless of what industry an employee might be working in. Depending on the material of the work glove and the chemical spilled, it is possible to receive the least or maximum amount of protection for your hands. However, chemicals are not only a hazard because they spill or splash, but vapors or fumes from them can irritate unprotected skin.

As the name implies, thermal hazards involve changes in temperature. For example, a welder would need to have safety gloves that can withstand high heat, whereas someone removing items from a freezer would need maximum protection from frostbite and the cold temperature.

(1000 pr. characters)

*8. INDUSTRIAL PRODUCT SAFETY RESEARCH*

Industrial product research is a field of science, which is continually creating new products or ways to ensure safety within the workplace. Research into products, which can increase the safety of items such as work glasses, full body suits, and eye goggles are being tested throughout North America and Europe.

However, unlike product research for pharmaceuticals, industrial product research is limited to testing new products or improved products under conditions set up within a laboratory.

*Bio-based Industrial Safety Products*. The whole world is going “green,” and manufacturers of industrial safety products are no exception. Many manufacturers are thinking of new ways to use environmentally friendly ingredients, to make their industrial products. For example, cornstarch has been used to make packaging materials, and previously orange peels have been used in the production of a new type of fuel. With the ability to incorporate

environmentally friendly ingredients into industrial safety products, manufacturers should be supported for their efforts to produce both environment and workplace safe products.

(988 pr. characters)

*9. POLICY STATEMENTS: BIOFUEL SUSTAINABILITY*

Much attention is currently focused on the use of biofuels as an alternative energy source. Supplying the emerging biofuels industry with enough biomass will have a major impact on the management and sustainability of ecosystems. Biofuels have great potential, but the ecological impacts of their development and use must be examined.

The sustainability of alternative biofuel production systems must be assessed now, in order to maximize the potential for developing truly sustainable scenarios – that is, profitable systems that can provide adequate biomass with the least amount of environmental damage.

Biomass extraction and the byproducts of biofuel manufacturing will directly affect ecosystems in many ways. Much of the biomass needed for biofuel production will be supplied by croplands. Marginal croplands will be farmed more intensively and previously unfarmed areas will be brought into production. Current technologies emphasize the use of annual and perennial grains.

However, crop "leftovers," such as corn husks and wheat straw, and fiber from perennial crops such as switch grass are likely to contribute as well.

(1005 pr. characters)

*10. ARE YOU AT RISK?*

According to the Census of Fatal Occupational Injuries, there are approximately 4 deaths per 100,000 of the population due to occupational injuries. Most of the fatal injuries occurred with workers over 55 years old in the construction and transportation industries. An interesting fact is the increase in employees being fatally injured from an object falling on them. Overall, the "Census" revealed that more than 90 % of work-related injuries occur at private companies.

Based on this information, develop a plan to practice *Safety First!* if you are in an industry with a high level of workplace injuries.

*Preventing Industrial Eye Injury*. The first step in preventing injury to eyes in an industrial setting is to wear protective equipment. Many industrial workers have been able to prevent injury to their eyes this way.

Another way to prevent eye injury in the workplace is to investigate hazardous areas or tasks. Certain chemicals have the potential to cause damage to eyes.

eyes. The three top causes of eye injuries include welding accidents, tools or machinery entering the eye, and bonding agents splashing onto the face.

Therefore, by knowing which areas are more likely to be hazardous to your vision, adequate prevention methods can be adopted.

(1073 pr. characters)

*11. OSHA REGULATION VIOLATIONS*

Occupational Safety & Health Administration (OSHA) has the ability to levy fines on the employers who are found guilty of disregarding one or more safety standards. To ensure compliance with these published standards, OSHA inspectors make on site visits to witness the job safety measures being employed by employers.

Even with the amount of information available, OSHA regulation violations still do occur. Violations can be described as a company failing to adhere to safety regulations. These violations can occur due to management or employees ignoring regulations, or failing to keep informed about current regulations.

Common violations seen by OSHA include failing to wear hearing protection or safety glasses, which were discovered as a result of employees losing their hearing, or damaging their eyes. Another violation commonly seen involves a few companies who were cited for their haphazard way of documenting employee injuries. By not keeping proper records, it would be hard to assess what areas needed safety improvements. Lastly, another common violation found in some workplaces is blocked safety doors that need to be used to escape in the event of an emergency.

(1025 pr. characters)

*12. INDUSTRIAL ACCIDENT PREVENTION INFORMATION*

Every industrial safety checklist should include personal protective equipment training to help you understand the purpose and correct use of personal safety equipment. You might have the best personal protective equipment (PPE) available but it may prove meaningless if you are not properly trained in its use. Industrial safety training should be the combination of common sense, accident avoidance theories and the correct use of PPE for the workplace situations one faces.

Should your employer not provide initial and continuing safety training, get the knowledge you need by yourself. Use the Internet to become familiar with industrial accident prevention and learn who the best industrial safety distributors are.

The combination of industrial safety training and the use of effective PPE will keep you and your co-workers safe on the job. Industrial accident situations will still occur through circumstance, not personal fault, but these can be greatly reduced if you remain alert on the job, always wear appropriate protective clothing and equipment, and be proactive if you witness situations creating increased risk to you and other employees.

(1030 pr. characters)

*13. HOW TO PREVENT TRAGEDY OF HOME HOUSE FIRE*

Heating equipment is the leading cause of home fires in the United States. The first line of defense is having good, working smoke alarms installed in each bedroom and the kitchen.

*Electric heaters*. If you use an electronic portable space heater in your home, be sure to maintain clearance space of at least three feet around and in front of the heater to keep it away from combustible items. Never operate the heater while sleeping, and use only heaters that have built-in safety features such as a tip-over safety switch that will turn the heater off automatically if it is accidentally turned over or kicked.

*Fireplaces and wood stoves*. Have the flue pipes and chimneys cleaned once a year before winter, to be sure there is no dangerous buildup of creosote inside the chimney flue. Creosote is highly combustible and is a common cause of chimney fires. To help prevent creosote deposits, do not burn green wood, trash, damp wood or wood scraps. If your fireplace or wood stove has glass or metal screen doors, be sure they are closed while the fire is burning, to keep sparks or hot embers from jumping out of the fire onto your floor. Never go to bed without closing the doors, even if the fire seems to have burned out.

(1048 pr. characters)

*14. VOLUNTEER FIREFIGHTERS*

The volunteer firefighter is such a familiar staple of American life that most people don’t question the situation. Yes, these people are brave for battling fires, but their true heroism stands out when you find out just what it takes to hold the whole organization together for the good of a community.

You would be surprised, but most U.S. firefighters are, in fact, volunteers – about 77%, as of 2014.

While we know it takes an incredibly brave and selfless person to donate their time to saving life and property, thinking about it for more than a minute may make you wonder how it works, exactly. Do they have day jobs? How do they get to the fire? Do they really not get paid?

When you think of the term "volunteer", you immediately think "working for free." But the term can also be applied to others who work on-call and hold down other employment. While they don't work shifts per se, they do get paid for their time spent responding to an emergency.

It's not just firefighters, either. In some areas, the volunteer fire department may be the only emergency services for miles and miles around, so they also have a hazardous material crew, emergency medical technicians, and other first responders. In areas where personnel are few, the local police force may be trained in these areas and function as the fire department when the need arises.

(1137 pr. characters)

*15. HOW OSHA CAN IMPROVE WORKPLACE SAFETY*

The Occupational Safety & Health Administration (OSHA) sets standards for the appropriate personal protective equipment (PPE), protective apparel, and industrial accident prevention techniques to protect employees and, indirectly, employers from worker injury while on the job. They analyze huge volumes of data regarding both industrial accidents and types of PPE to protect against workplace hazards and avoiding accidents. While the construction industry remains a primary focus, many other industries are also covered under the OSHA Act.

PPE standards are addressed in different sections based on the type of protection and the specific areas of their use. There are chapters on general requirements, eye and face protection, respiratory, head, foot, and hand protection. A separate set of standards applies to protection against electrical hazards faced on the job, whether or not you are a professional electrician. Another area covers toxic and hazardous substances encountered in different types of workplaces.

These standards are more than mere recommendations. OSHA has a staff of inspectors who make random, unannounced visits to job sites and companies around the U.S. to ensure industrial safety standards are being followed.

(1088 pr. characters)

*16. INDUSTRIAL ECOLOGY*

Industrial ecology is the study of material and energy flows through industrial systems. The global industrial economy can be modeled as a network of industrial processes that extract resources from the Earth and transform those resources into commodities which can be bought and sold to meet the needs of humanity. Industrial ecology seeks to quantify the material flows and document the industrial processes that make modern society function. Industrial ecologists are often concerned with the impacts that industrial activities have on the environment, with use of the planet's supply of natural resources, and with

problems of waste disposal. Industrial ecology is a young but growing multidisciplinary research field which combines aspects of engineering, economics, sociology, toxicology and the natural sciences.

Industrial ecology has been defined as a "systems-based, multidisciplinary discourse that seeks to understand emergent behavior of complex integrated human / natural systems." The field approaches issues of sustainability by examining problems from multiple perspectives, usually involving aspects of sociology, the environment, economy and technology. The name comes from the idea that we should use the analogy of natural systems as an aid in understanding how to design sustainable industrial systems.

(1151 pr. characters)

*17. AIR POLLUTION, SAFETY CONCERNS AFFECTING FIREWORKS SALES IN CHINA*

BEIJING (= Peking), Jan. 1914. Smog across China and the tradition of setting off fireworks to celebrate the Spring Festival make the condition worse. China is known to be the world's largest producer, consumer and exporter of fireworks. An estimated 90 percent of the globe's pyrotechnics are designed and produced in China, with the most of them being in Liuyang, Hunan province (пров. Хунань в Китае). But several fireworks incidents in recent years have raised concerns about safety and the air pollution in Northern China has also affected sales. The fireworks companies are trying to cope with these challenges.

Besides the safety concerns the air pollution in northern China in recent years has also impacted the fireworks trade. Many people are calling for an end to firecrackers in a proposal for cleaner air. Beijing bans fireworks celebrations if serious air pollution is forecasted for the holidays.

The ban will take effect if orange or red alert for air pollution is issued. In order to check how much the fireworks will affect the air quality in northern China, the local government has been conducting experiments.

(1005 pr. characters)

## GLOSSARY
(to supplementary texts)

**A**

airborne переносимый или перевозимый по воздуху
adhere (to) твёрдо держаться, придерживаться чего-л.
adjust регулировать; устанавливать
alert тревога, сигнал тревоги; бдительный, внимательный
ambient окружающий
anticipate ожидать, предвидеть
apparel одежда
appropriate подходящий, соответствующий; должный
assess оценивать, определять (величину)
awareness информированность, осведомлённость

**B**

ban запрещение; запрещать
bar препятствовать; мешать
barrier guard защитное ограждение
bonding agent клей, клеящее вещество; связующий
buildup накопление
burn out догорать, прекращать горение
byproduct побочный продукт; субпродукт

**C**

call for призывать к, требовать
census перепись; сбор сведений
challenge вызов; сложная задача, проблема
charcoal древесный уголь
checklist = check list контрольный перечень/список
cite вызывать в суд
clearance space зазор
combustible воспламеняемый, горючий
commit передать на рассмотрение; обязывать (кого-л. что-л. делать); поручать
commodity (часто pl) товар, предмет потребления
compliance соответствие; соблюдение
contaminate загрязнять; отравлять
cornstarch кукурузный крахмал
coveralls рабочий комбинезон, спецодежда
cropland пахотная земля

**D**

DDT ДДТ инсектицид сокр. от dichlorodiphenyltrichloroethane
discretion усмотрение; осторожность; свобода действий; осмотрительность;
disregard пренебрегать, относиться небрежно; игнорировать
duct канал, труба, трубопровод

**E**

ear muffs = earmuffs защитные резиновые кольца; наушники
ear plugs затычки для ушей/беруши
ember тлеющие (в золе) красные угольки; горячая зола
encounter встретиться; сталкиваться
enforcement соблюдение правопорядка, закона
exempt освобождать; предоставлять привилегии
exemption освобождение; исключение, изъятие
extraction добыча, извлечение

**F**

fan вентилятор
firecracker фейерверк
for the good of ради
fire department пожарная команда, пожарное депо
flue воздухоотводная труба; дымоход; жаровая труба (парового котла)
frostbite обмороженный участок (тела); обморозить, отморозить

**G**

goggles защитные очки

**H**

handle обходиться, обращаться; управляться
haphazard случайный; бессистемный
hold down удержать, не потерять
housing тех. корпус
husk шелуха, скорлупа, оболочка

**I**

impact влиять, воздействовать
issue исходить, выходить; появляться

**K**

keep records вести протоколы (отчётность)

**L**

leftover остаток
levy налагать (штраф)
liability долг, задолженность; платёжное обязательство, ответственность
liable ответственный

**M**

marginal приграничный, краевой
meaningless бессмысленный
mediocre посредственный; заурядный, средний

**N** non(-)profit некоммерческий

**O**

occupational hazards риски, связанные с характером работы, профессиональные риски
on call по вызову, по требованию
overexposure чрезмерное воздействие

**P**

per se само по себе; по сути, непосредственно; как таковой
perennial многолетний
phase out прекращение производства, постепенно прекращать
pose представлять собой, являться
provide grants предоставлять дотации; субсидии

**R**

recognition признание, одобрение
relevant уместный, относящийся к делу
reliance доверие, уверенность
respond to реагировать, отзываться на (что-л.)
responder сотрудник аварийно-спасательного подразделения
ruthless безжалостный, беспощадный, жестокий

**S**

safeguard предохранительное устройство, приспособление; ограждение
safety features защитные характеристики; средства обеспечения безопасности
sawdust опилки
setting окружающая обстановка, окружение
settlement расчёт, уплата
shift смена; work shifts работать посменно; изменение, перемена; перемещение, сдвиг
slate раскритиковать
solvent растворитель
space heater комнатный электрообогреватель; электрический камин
splash плескать(ся); забрызгивать(ся)
staple главный элемент (чего-л.); основное занятие
sue преследовать в судебном порядке; подавать в суд, предъявлять иск
susceptible подверженный
sustainable (экологически) устойчивый (не наносящий ущерба окружающей среде); рациональный
switch подрезать, подстригать

**T**

tip полезный совет; намёк, подсказка
tip-over опрокидывающийся
trainee практикант, стажёр

**U**

UNEP от United Nations Environment Program ЮНЕП, Программа ООН по окружающей среде

**V**

vector-borne трансмиссивный; передаваемый переносчиком (болезни)

**W**

waste disposal удаление отходов или сточных вод
welder сварщик
wick фитиль
win-win беспроигрышный, взаимовыгодный

## TABLE OF CONTENTS

## БИБЛИОГРАФИЧЕСКИЙ СПИСОК

1. Encyclopedia Britannica CD2000 Deluxe, Windows 95, 98 или NT; 100 Мб HDD; 2xCD-ROM.
2. Сизова, В.В. Environmental Protection and Mining Engineering / В.В. Сизова, О.Г. Шилова. Тверь: ТвГТУ, 2012. 88 с
3. Рыжков, В.Д. Деловой английский язык. Менеджмент: пособие по изучению англ. языка / В.Д. Рыжков. Калининград: Янтарный Сказ, 2006. 256 с.
2.Репетиционное тестирование. www.fepo.ru/test_demo.php. URL http://www.answers.com // (дата обращения 23.03.2014).

Сизова Виктория Валентиновна
Шилова Ольга Геннадьевна

TECHNOSPHERE SAFETY

Учебное пособие

Тексты на английском языке в авторской редакции

Корректор Ю.Ф. Воробьева
Технический редактор Т.С. Самборская

Подписано в печать 25.09.2014
Формат 60x84/16 Бумага писчая
Физ. печ. л. 6 Усл. печ. л. 5,58 Уч.-изд. л. 5,22
Тираж 100 экз. Заказ № 57 С – 56

Редакционно-издательский центр
Тверского государственного технического университета
170026, Тверь, наб. Афанасия Никитина, 22