НАЦІОНАЛЬНИЙ УНІВЕРСИТЕТ ЦИВІЛЬНОГО ЗАХИСТУ УКРАЇНИ

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Англійська мова
для галузі знань
«Цивільна безпека»

Навчальний посібник

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ВСТУП

Навчальний посібник адресовано студентам вищих навчальних закладів, які навчаються у межах галузі знань "Цивільна безпека".

Мета даного посібника – допомогти оволодіти студентам та курсантам як навичками перекладу технічних текстів фахового спрямування, так і здобути навички усного і письмового спілкування у сфері майбутньої професії. Навчальна програма викладання дисципліни "Англійська мова за професійним спрямуванням" передбачає формування професійної мовної компетенції – тобто мовної компетенції, пов'язаної з фахом студента. Формування і розвиток професійної компетенції пропонується реалізувати за допомогою фахових текстів, з яких складаються тематичні розділи посібника, і шляхом виконання лексичних, граматичниз та комунікативних вправ до них.

Своєю структурою посібник послідовно відображає шлях пізнання професії, обраної студентом. Тематичні розділи відображають основні поняття галузі знань "Цивільна безпека", охоплюючи питання історії розвитку пожежної та аварійно-рятувальної справи, основ пожежної та техногенної безпеки, початкових знань процесів горіння, методів профілактики та організації робіт під час ліквідації надзвичайних ситуацій. Основним методичним принципом посібника виступає моделювання на базі отриманих лексичних знань типових комунікативних ситуацій професійного спілкування, врахування відмінностей української аварійно-рятувальної термінології від англійської, поетапність формування мовленнєвих умінь і комплексність мовного матеріалу.

Посібник складається з 12 тематичних розділів, поурочного словника, довідника. Кожен з розділів складається з підрозділів, які відображають етапи формування мовних і мовленнєвих умінь: READING, VOCABULARY PRACTICE, SPEAKING, WRITING.. Тема розділу висвітлюється оригінальними текстами, до яких у поурочному словнику подається тематично згрупований список лексичних одиниць. Вправи підрозділу VOCABULARY PRACTICE – це робота з лексичним матеріалом розділу, яка передбачає виконання тренувальних і творчих вправ, вправи на підстановку, трансформацію, пошук аналогії. WRITING BANK укладено відповідно до матеріалу, який розглядається у розділах. Навчальний посібник містить якісно нові вправи – рольові та проблемні ситуації, які представлені у підрозділах SPEAKING, присвячених усному спілкуванню. У цих підрозідлах здійснюється робота з мовними зразками, пропонується укладання ситуативних діалогів, побудованих на засвоєному матеріалі усього розділу.

На допомогу студенту і викладачеві у перевірці засвоєного лексичного матеріалу розділи містять Checking Tasks. Контроль вивченого матеріалу здійснюється шляхом виконання завдань цього розділу. Завдання охоплюють тематичний розділ і виступають логічним завершенням вивчення теми.

Поступово, від розділу до розділу обсяг професійних термінів та тем, пов'язаних з майбутнім фахом, збільшується, що дозволяє органічно готувати студента до використання набутих знань на практиці.

Тексти навчального посібника відображають спектр тематики, що вивчається студентами протягом навчання і містять фахову термінологію та специфічну лексику технічного напряму. Розділ посібника розраховано на 6-10 академічних годин, у залежності від рівня підготовки студентів, що дозволяє диференційовано підходити до процесу викладання дисципліни і використовувати посібник як під час аудиторних занять, так і для самостійної роботи.

3MICT

UNIT 1

ENGLISH AS A WORLD LANGUAGE

READING

Pre-reading activity

1. Do you know that...

... English has the largest vocabulary with approximately 500 000 words and 300 000 technical terms?

... 85% of the world's mail and 90% of the world's telephone calls are in English?

... 400 million people speak English?

... the oldest written language is Egyptian?

... Indian sub-continent has the largest number of languages — 845?

... Cambodian has the most letters in its alphabet — 72?

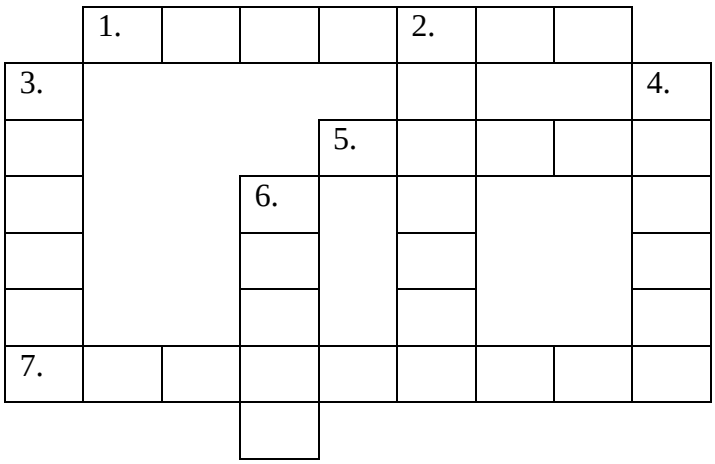
... the largest encyclopedia is printed in Spanish?

... it took the French Academy 297 years to write a book of 263 pages?

... there are eight million speakers of Esperanto in the world?

... by 2010 the number of people who speak English will exceed the number of native speakers?

2. Countries Where English Is Spoken



Across

1. European country whose capital is London.

5. African country whose capital is Nairobi.

7. Nation which is also a continent.

Down

2. Mr. Clinton's country.

3. See 6 down.

4. Where both English and French are spoken.

6. (with 3 down) Mr. Mandela's country.

JIGSAW READING

1. Get into three groups:

Group A is to read text 1.

Group B is to read text 2.

2. Read the texts.

text 1

Today, when English is one of the major languages in the world, it requires an effort of the imagination to realize that this is a relatively recent thing - that in Shakespeare's time, for example, only a few million people spoke English, and the language was not thought to be very important by the other nations of Europe, and was unknown to the rest of the world.

English has become a world language because of its establishment as a mother tongue outside England, in all the continents of the world. This exporting of English began in the seventeenth century, with the first settlements in North America. Above all, it is the great growth of population in the United States, assisted by massive immigration in the nineteenth and twentieth centuries that has given the English language its present standing in the world.

People who speak English fall into one of three groups: those who have learned it as their native language; those who have learned it as a second language in a society that is mainly bilingual; and those who are forced to use it for a practical purpose - administrative, professional or educational. One person in seven of the world's entire population belongs to one of these three groups.

Three hundred million people speak English as their native language. English is their first language. They live in countries such as Britain, The United States of America, Canada, Australia and New Zealand.

Six hundred million people use English as an official, second language. They live in countries such as India, Pakistan and Nigeria.

But at least one hundred million people now study English as a foreign language. They live in countries such as Spain, Greece, Portugal, Mexico, Brazil, Argentina, China, Russia and Poland - in fact, almost everywhere.

Incredibly enough, 75% of the world's mail and 60% of the world's telephone calls are in English. Therefore, at least one thousand million people can speak, read, write and understand English today.

text 2

Human language is, perhaps, the most astonishing creation of man. It helps us understand each other. We make use of it in practically everything we do.

Language is a means of communication in human society. People can use other means of communication, such as red lights and flags, but these signs are interpreted into human language. So language is the normal form and the main means of communication in human society.

We cannot say anything definite about the origin of language. But we realize now that language is a product of human society and it can exist only in human society.

Man ("homo sapiens") is the only living being with the power of speech. The appearance of language on our planet is as recent as the appearance of man himself. Labour and language are distinctive and exclusive marks of human being. Without them the growth and progress of human society is unthinkable.

Primitive people had a few hundred words at the most. Today highly cultured nations have more that seven hundred thousand words in their dictionaries. This means that now people can communicate by words much better than they did it in the remote past. The rapid growth of the vocabulary of modern languages is due to the development of science and technology.

But spoken languages were easy to forget; so people invented writing to record them. Writing is a way of recording language by means of visible marks. The first form of writing was picture writing. Symbols representing the sound of a language appeared much later. The art of writing made it possible to fix thoughts and to store knowledge, and to pass them on from one generation to another.

There are people who know three, five or six languages. They are polyglots. They study languages because knowledge of languages is their specialty or hobby.

For a modern engineer and research worker it is absolutely necessary to have practical command of foreign languages. A scientist who can read the literature of his field in several languages has a much better grasp of the subject. Learning foreign languages enriches the native language, makes it clearer, more flexible and expressive.

3. Here are some questions on the texts.

Find the questions on your text (1 or 2) and answer them:

1. Why is human language the most astonishing creation of man?
2. What can you tell about the appearance of language?
3. What do you know about English (Ukrainian, Russian)?
4. What do you call people who speak many languages?
5. Why has the English language become a world language?
6. What English speaking people groups do you know? How are they classified?
7. How many countries do you know where English is spoken?
8. How many languages are being spoken in the world today?

9. Why is it necessary to have practical command of foreign languages?
10. Why can people now communicate by words much better than they did it in the remote past?

VOCABULARY PRACTICE

1. Make sentences using these words.

1. International, English, an, is, now, language.
2. Learn, different, students, our, subjects.
3. In, the, we, city, live, a, flat, in, of, center, the.
4. Communication, is, a, of, in, means, human, society, language.
5. Languages, people, are, or, know, three, who, five, six, there.

2. Give English equivalents. Read and translate the text.

A truly educated person should know at least one foreign (мова), which will enable him to communicate with foreigners, (читати) books in the original, use a personal (комп'ютер) and take part in cultural and educational exchanges with other countries.

Among a great number of (іноземних) languages I've chosen English because it is the world's most important language in politics, science and culture. Over 330 mln people speak it as a (рідна мова) and nearly twice as many use it as a second language. Half of the world's (наукової літератури) is in English. It is the language of computer technology. You will hardly be able to find a good job unless you master the English language.

Furthermore, English is a very (мелодійна мова). When I heard English (мовлення) for the first time, I was taken with the harmony of its sounds and melodies. Later while studying the English (граматика) I discovered the other way of reflecting reality. And what I liked most about English, that's its (прислів'я) and idioms. They are wise, witty and rhymed; (багато традицій) of the English nation are represented in them.

Of course my command of the language is still rather far from being perfect. But I believe that everything depends on myself and I'm determined to achieve the aims I'm pursuing.

3. Match the synonyms using your dictionary.

major	developments
to drop	to establish
to indicate	mankind
scholar	artificial
man-made	to oppose
to occupy	to mark
to explore	to help
events	to investigate

modern	aim
to conquer	up-to-date
throughout	to name
purpose	important
to call	humanity
primary	original
to resist	all over
scientist	to decrease
to assist	tongue
language	to set up

4. Put the nouns in brackets in the correct form.

Language is human (speech), either spoken or written. Language is the most common system of communication, which allows (person) to talk to each other and to write their (thought) and (idea). The word language may be used to mean any system of communication, such as traffic (light) or Indian smoke signals. But the origin of the word shows its basic (use). It comes from the Latin word *lingua*, meaning (tongue). And a language is often still called a tongue.

5. Correct the mistakes in the sentences:

According to linguists (mans who study languages), there are about 6,000 languages spoken in the world today. This numbers does not include dialects (local forms of a language). Many language are spoken only by small groups of a few hundred or a few thousand people. There are more than 200 languages with a millions or more speakers. Of these languages at least 24 have over 50 millions speaker each; Arabic, Bengali, Cantonese, English, French, German, Hindi, Italian, Japanese, Javanese, Korean, Malay-Indonesian, Mandarin, Marathi, Portuguese, Punjabi, Russian, Spanish, Tamil, Telugu, Turkish, Urdu, Vietnamese, and Hindi and Urdu are sometimes grouped together as Hindustani.

6. Make up word combinations:

to use	victims
to rescue	as a crew
to work	interesting work
to offer	fire-fighting equipment
to calculate	about fire safety
to speak	the amounts of water and pressure

7. Fill in the gaps with nouns given in the box.

fire protection fire prevention	subjects
fire-equipment industry	emergencies
universities	fire safety
chemistry and physics	mathematics

The fields of _____ _____ and ____ _____ offer interesting work outside of fire departments. Positions are in insurance companies, government service, the ____-____ ____ , and fire-safety education. Several _____ offer programs for persons interested in these fields. Knowledge of ____ and _____ are for young men who want to become fire fighters. Courses in these _____ will help them to understand how fire arises. They should understand _____ in order to calculate the amounts of water and pressure that are needed in various _____. They should also be able to speak well before audiences about _____.

8. Arrange the following words into sentences:

a) How to use fire-fighting equipment; our University; how to rescue victims; teaches; how to work; and the many other skills; effectively as a crew,

b) Each; more; year; fire fighters; than; receive 125,000; at these schools; training.

c) The students; fire-fighting; techniques; skills; new; practice; they; have; also study; and.

SPEAKING

Work in pairs.

1. Discuss the following questions:

1. Why have you chosen English to study?

2. Do you agree that the English language is the world's most important language in politics, science and culture?

3. Are you satisfied with your knowledge of English?

2. Make up dialogues according to the model:

e.g.:

- What country are you from?

- I am from Ukraine.
- What language do you speak?
- I speak Ukrainian and Russian.
- What nationality are you?
- I am Ukrainian.
- Who lives in Ukraine?
- The Ukrainians, the Russians and other nationalities.

3.Use the names of the following countries in your dialogues.

Switzerland, Denmark, Poland, Turkey, Holland (the Netherlands), Germany, China, Ireland. Spain.

4. Work in pairs. Do you think the following statements are true or false?

1. English was already an important world language four hundred years ago.
2. It is mainly because of the United States that English has become a world language.
3. One person out of seven in the world speaks perfect English.
4. There are few inflections in modern English.
5. In English, many verbs can be used as nouns.
6. English has borrowed words from many other languages.
7. In the future, all other languages will probably die out.

5. Work in pairs.

Discuss the following questions together, and then ask each other the questions. Speak about your friends who are your groupmates or faculty mates:

1. Where do you study?
2. What year cadet are you?
3. What faculty do you study at?
4. How many years do you plan to study?
5. Why have you chosen this profession?
6. What would you like to become after graduating from the University?
7. What do you know about disasters? Describe them using words from the text.
8. What are the main fire-fighter's tasks?
9. What organization governs and coordinates the work of fire departments?
10. Why do fire departments extinguish fires free of charge?

CHECKING TASKS

1. Translate into Ukrainian:

A) Accordingly, active vocabulary, assistant, belongings, conqueror, creator, disaster, establishment, explorer, indicator, invader, increasingly, foreigner, migration, outside, powerful, purpose, purposeless, rescuer, scientist, scientific, settlement, speaker, requirement

B)

modern languages	methods of science
according to the rule	modern English
the entire world	modern school
foreign languages	a man of science
to drop into a place	primary education
to create a language	primary school
civil population	to require help
consequences	research
assistance	scientific vocabulary
emergency	social sciences
recently	fire prevention

2. Correct the mistakes in these sentences.

We arrived on the ten September.

There were two hundred twenty altogether.

My birthday is thirty-one August.

My phone number is seven twenty three, six naught nine.

3. This text includes some words used in American English. Underline them and write the British English words on the right-hand side.

It was getting near lunchtime and I needed some gas, so I left	1------
the interstate and drove towards the nearest town. There was	2------
a gas station just outside the town and I decided to stop and	3------
have a look round. I put the car in a parking lot and took a	4------
cab to the centre. It was midday and very hot, so I stopped at	5------
a little cafe with tables on the sidewalk. I started talking to a	6------
truck driver, who gave me a history of the town, and afterwards	7------
he took me on a guided tour. It made a very nice break.	8------

4. Here are the answers to some questions. Work out the questions:

1. The word language comes from the Latin word lingua.
2. Language is the main means of communication among people.
3. English influences the development of the advanced technology of today.
4. Almost every language has its dialect.
5. Children by the age of 5 and 6 communicate well not having an idea of grammar.
6. English is a very flexible language.
7. Immigration in the 19th and 20th centuries has greatly influenced the development of the English language.
8. English-speaking people can be divided into 3 groups.

5. Answer these questions. Write your answers in words.

1. When were you born?
2. How much do you weigh?
3. What is the number of the flat where you live?
4. Is that an odd or an even number?
5. What is the approximate number of the population of your town?
6. What is the approximate number of the population of your country?
7. What is the normal temperature of a healthy person?
8. What is the number of the fire department in your district?

UNIT 2

CIVIL DEFENCE

READING

Pre-reading activity.

Think over what you know about civil defence. Answer the questions below:

1. What do you know about fire and other disaster?
2. Would you like to be able to control forces of nature?

You are to read and translate the text about Civil Defence. Get ready to answer the questions given after the text.

Civil Defence

Civil defence is a nonmilitary program designed to save lives and property if an enemy attacks a country. Civil defence also provides assistance in such emergencies as blizzards, earthquakes, floods, hurricanes, tornadoes, explosions, and fires, and it is intended to reduce the consequences of major terrorist incidents.

Civil defence in action

The first task of a civil defence agency in an emergency is to warn the public of danger and provide instructions on how to avoid hazards. People may be able to protect themselves from an enemy attack or other disaster in one of two ways. They can (1) evacuate the area or (2) remain and take shelter. Civil defence agencies advise the public about the best action to follow in a particular situation. They also coordinate rescue efforts and other emergency services. In most disasters, however, people usually reach safety without help and take care of their own needs.

Warning. Most civil defence agencies in the United States warn communities of danger by means of the attack warning signal and the attention, or alert. Signal both 'signals last for three to five minutes.

The attack warning signal consists of a wavering sound from a siren or a series of short blasts on a factory whistle or other device. This signal means that an enemy has attacked the country and that people should act immediately to protect themselves.

The attention signal is a long, steady sound from a siren, whistle, another device. It means that the community is threatened by a peacetime disaster. After either signal has sounded, radio and television stations broadcast information about the danger and give instructions for the public to follow.

Evacuation. Floods and hurricanes are the most common disasters for which communities are evacuated. Unlike many natural disasters that strike suddenly, most floods and hurricanes can be predicted in time for people to safely leave the area. If time permits, individuals should board up windows and disconnect all electric appliances before leaving home. Then they should go to the

location directed by the civil defence agency, using the route specified. Citizens also may be asked to evacuate an area after an industrial accident to protect them from such hazards as leaking gasoline or poisonous fumes.

Shelter. Earthquakes, tornadoes, and other emergencies that occur suddenly give people little or no time to evacuate a community. If a tornado approaches, people should immediately take shelter in a storm cellar or basement. In an earthquake, they should stand under a doorframe or crouch under a table or chair until the shaking stops. If caught outdoors during such emergencies, they should get away from such objects as telephone poles, power lines, or anything else that might fall or be blown down. If a tornado, people should lie facedown-in a ditch if possible-for protection against flying debris.

Emergency services. When a natural disaster strikes, civil defense agencies coordinate the efforts of fire fighters, police officers, and other community employees to save lives and property. These workers often with help from the National Guard, Red Cross volunteers, and others-evacuate people who have been stranded in, hazardous areas. They also provide medical care for the injured and food and shelter for people who have had to leave their homes. Officials may find it necessary to close off certain areas to prevent looting of unattended buildings.

Answer the questions

1. What is Civil defence?
2. When does it provide assistance?
3. Who shares the responsibility for Civil defence?
4. Who develops and carries out Civil defence plans?
5. What were the first US civil defence agencies?

VOCABULARY PRACTICE

1. Disaster vocabulary

1. A violent and heavy snowstorm is called a ___
2. When crops fail and livestock die through lack of water because of no rain there is a ___
3. The above situation could cause massive starvation through lack of food. This situation is called a ___
4. When the land violently moves or shakes especially around fault lines it's called an ___
5. When the above situation causes a huge body of seawater to move in towards the shore it is known as a ___
6. When there is a violent outbreak of lawlessness by people it's called a ___
7. A loud noise and sometimes huge force created by something like a bomb is known as an ___
8. A violent wind that twist round and round and causes massive destruction is called a ___

9. A disease that spreads rapidly amongst a lot of people in the same area is called an ___

10. Something that makes the air, rivers, or seas dirty is known as ___

2.Read the following text and match the headlines given in the box to the appropriate paragraphs.

- **For Military Missions**
- **For Aerial Observation**
- **For Agricultural and Forestry Operations**
- **Helicopter**
- **For Transportation and Construction Work**
- **For Rescue Missions**

Helicopters can (to use) for many tasks because they (to be able) (to hover) in midair and (to take off) and (to land) in small areas. They (to be) particularly useful (1) for rescue missions, (2) for aerial observation, (3) for transportation and construction work, (4) for agricultural and forestry operations, and (5) for military missions.

_____ In the armed forces, helicopters (to serve) as flying ambulances and as troop transports. Powerful military helicopters (to carry) artillery to key battle positions and (to fly) jeeps, tanks, and other equipment wherever they (to need). Helicopters (to equip) with electronic gear (to pick up) and (to disrupt) enemy communications signals. The armed forces also (to use) helicopters (to observe) the movements of enemy troops and ships. Many naval helicopters (to have) devices (to locate) and (to track) submarines. They may also (to arm) with depth charges, missiles, or torpedoes. Army attack helicopters may (to carry) bombs, cannons, machine guns, or missiles. Their main targets are enemy tanks.

_____ Many early developers of helicopters (to intend) them (to use) for saving lives. Over the years, many thousands of people have been rescued by these “angels of mercy”. A helicopter can (to hover) above the scene of a disaster. A sling or harness can then (to lower) from the craft to endangered people below. They are then (to pull up) and (to flow) to safety. Helicopters (to use) (to pluck) people from burning skyscrapers, sinking ships, and rising floodwaters. They (to fly) stranded mountain climbers and injured skiers to safety. (To serve) as flying ambulances, helicopters can (to land) near automobile or airplane crashes and (to rush) the injured to hospitals. Helicopters are also (to use) (to deliver) food and medicine to areas that cannot (to reach) by other vehicles because of earthquakes, floods, or storms.

_____ In many cities, police use helicopters (to trail) fleeing suspects and (to direct) squad cars on the ground. Law enforcement agents in helicopters (to look)

for lost people and escaped convicts. They also (to patrol) national borders on the lookout for smugglers and illegal immigrants.

Helicopter service (to be) essential to many offshore oil-drilling operations. Numerous offshore wells (to be) in rough ocean waters that (to make) it hazardous (to bring) in replacement crews and supplies by ship. However, helicopters can (to land) on the drilling platforms and so (to provide) much faster and safer delivery than ships.

Answer the questions

1. What can helicopters serve as?
2. What aircraft can be called helicopter?
3. What kind of wings does a helicopter have?
4. What do you know about the word helicopter?
5. Are there any nicknames for the helicopter?
6. What are basic characteristics of the helicopter?
7. Why are helicopters called “angels of mercy “?
8. What are they used for?
9. What makes use of helicopters?
10. How are helicopters used in the construction industry?
11. What are some military uses of the helicopter?
12. In what ways can a helicopter fly that an airplane cannot?
13. Why is helicopter service essential to many offshore oil-drilling operations.
14. Why is use of helicopter essential for rescue servicers?

3. Put the verbs in brackets into the correct forms. Read the text about the Red Cross.

The Red Cross. (to be) an organization that (to give) help to people all over the world both in peacetime and war. Its flag is a red cross on a white background.

The Red Cross (to start) by Henri Dunant. He (to see) a terrible battle in Italy and (to go) among the dead and wounded soldiers after the battle (to be over). Shocked that the suffering men (not to receive) attention, Dunant got the people of the nearby villages to help him care for the wounded of both sides.

When he (to return) to his home in Switzerland, Dunant (to set about) to form an organization to care for the suffering in all wars. In 1863, at a meeting for this purpose at Geneva, Switzerland, the International Red Cross (to get0 its start. Today (there be) 126 national Red Cross societies in the world, with over 200,000,000 members. The League of Red Cross Societies (to serve) as a link between all the national organizations. This (to make) it possible for the national organizations (to co-operate) with each other and (to make) use of Red Cross societies worldwide.

The International Committee of the Red Cross (to supervise) the Geneva Conventions, by which nations (to honor) the battlefield neutrality of the Red Cross and (to agree0 to humane treatment of prisoners of war and civilians. Some Muslim countries (to use) a red crescent on a white field instead of the Red Cross Iran (to use) a red lion and sun design.

4. Insert articles where necessary. Explain the usage of the articles. Read the following text.

American National Red Cross.

… Red Cross in … United States Was started in 1881, with Clara Barton as its… first president. … Miss Barton had become known for her work among … sick and … wounded during … U.S. Civil War. In 1881 also … organization took part in its first disaster relief work, giving aid to … homeless after … large forest fire in Michigan.

… disaster relief work of the American National Red Cross Includes sending help of all kinds to areas struck by floods, hurricanes, fires, explosions, and other storms or accidents. … American Red Cross provides food, shelter, and clothing for … people of these disaster areas. Resent major disasters that brought Red Cross aid included Hurricane Agnes in 1972, in which emergency care was given to 504,042 persons in 11 eastern states; flash floods at Ruffalo Creek, West Virginia, and Rapid City, South Dakota, also in 1972; and … 1974 tornado onslaught many Midwest communities.

… American Red Cross has helped U.S. military forces in each war since … Spanish-American War in 1898. It has aided them in … areas of health, welfare, and recreation.

In addition to its work in disaster and its services, … American Red Cross works for … general health, safety, and welfare of … country. … Red Cross Blood Program, for example, operates throughout … country and has blood ready for anyone needing it. Over 4,000,000 units of blood per year are collected.

The American Red Cross provides training.

Each year. It… constantly trains new instructors to teach these courses. … Volunteers trained by … American Red Cross serve regularly in … hospitals, nursing homes, and blood centers throughout the country. Other workers, such as … women who roll bandages and compresses for …. Hospitals, motor service drivers, … volunteer disaster workers, and canteen workers, help others through… American Red Cross

SPEAKING

1. As a class, create a list of disasters, both natural and human-caused. For example, a pandemic, chemical spill, hurricane, avalanche, tornado, earthquake, building explosion, *e-coli* outbreak, flood, computer virus and fire.

2. Next, draw a table on the chalkboard, labeled this way:

natural	both natural and human-caused	human-caused

Transfer the original list of disasters to the proper area of the diagram.Comment on:

For example:, a flood can occur becausethere has been too much rain over a short period of time or becausesomeone blows up a dam.

As a class, consider each of the human-caused disasters. Could any be either unintentional (accidental) or intentional? Describe possible scenarios. (Yes. For example, a wildland fire could be caused by a campfire that gets out of hand; or, by an arsonist who intentionally starts a fire in the forest)

CHECKING TASKS

1. **Think of three questions to ask your partner about each of these subjects:**

- The Red Cross in Ukraine.
- Civil Defence Agencies in Ukraine.
- Ways of evacuation I case of emergencies.

Have conversations. Try to sound interested and keep the conversation going.

2. **List as many words which as you know about Civil Defence; group up them into verbs, nouns and adjectives**.

UNIT 3

FIRE IN LEGENDS AND RELIGION

READING

Pre-reading activity

You are to find the following words in the article below. What connection do you think they have with Fire in Mythology? Work in pairs and use the dictionaries if necessary:

a gift of a god a dragon

the Temple of Vesta a monster

the Persians	animal hoofs and claws
the Egyptians	the Greeks
a priest	Rome
a shrine	to worship

Read the text and then discuss the list again.

Fire in Legends and Religion

The earliest use man made of fire was to keep him warm. As he became more civilized he learned to use fire in many other ways. Even in earliest times man had learned to use fire to cook food, to shape weapons and tools, to change clay into pottery, and to furnish light. Light was especially important because it drove away wild animals at night. But primitive peoples had very slow and unsatisfactory ways of kindling fires. Modern man has not only improved the methods of kindling fires, but also he uses fire in many more ways. Fire furnishes the energy to drive machines, and keeps vast industries running. It drives the large locomotives of our great railroad lines. It moves steamships across the ocean; it causes the airplane to fly; and it generates electricity. It has even changed the methods of fighting wars. Fire is used to remove and destroy waste materials, and to kill harmful bacteria.

Fire is also used in separating most metals from their ores, as well as in forging and shaping metals into useful things. Many chemical changes of materials are either made possible or speeded up by the use of fire. A few of these chemical changes are made in such places as sugar refineries and oil and rubber industries.

Controlled fire is useful to man, but uncontrolled fire is one of man's worst enemies. Thousands of lives and millions of dollars worth of property are lost each year through uncontrolled fires.

We can only guess that man may have gained his knowledge of fire from observing things in nature, such as lightning, the fire of volcanoes, and the heat of the sun. Early man also must have noticed that sparks fly when stones are struck upon one another, or when the hoofs or claws of an animal strike some hard substance. In Persian literature, there is a story of the discovery of fire in a fight with a dragon. One of the stones which the hero used as weapons missed the monster and struck a rock. Light shone forth and man saw fire for the first time. The mythology of nearly all primitive races contains some amount of the accidental or the supernatural happenings which first revealed fire to men. Fire was regarded as a true gift of the gods.

Fire was considered sacred because it was so essential to the welfare of man. Fire worship and sun worship have existed since very early times. Because fire was so hard to produce, the custom soon became common of keeping a public fire, which was never allowed to die out. These fires were kept

in every village among the Egyptians, Persians, Greeks, and Romans. They were often in the civil centre of the community.

The Temple of Vesta in Rome was an outstanding example of the importance of fire to the Romans. Vesta was originally the goddess of the hearth, and her shrine was in every home. But when religion became an affair of state, a temple was erected in which the sacred fire was kept constantly burning. This temple consisted merely of a round hearth. For its service there were selected the Vestal Virgins, who devoted their lives to the duty of attending the fire. They were selected by the high priest, or Pontifex Maximums, and the safety of the state was thought to depend upon the faithfulness of the Vestal Virgins.

Answer the questions:

1. How did people learn to use fire?
2. What ways of kindling fires did primitive peoples have?
3. What has modern man done with fire?
4. What does fire furnish and supply today?
5. What is fire used for?
6. What do you know about the use of fire in different industries?
7. How do you use fire in your life?
8. What is your opinion of controlled and uncontrolled fire?
9. How did a man gain his knowledge of fire?
10. What can we find in Persian literature concerning the discovery of fire?
11. What does the mythology of most of the primitive races contain?
12. How was fire regarded by early man?
13. What do you know about keeping a public fire?
14. How and where were these fires kept?
15. What examples of the importance of fire do you know?
16. Why did religion become an affair of state?

VOCABULARY PRACTICE

1.Fill in the gaps with nouns given in the box.

Fire and Civilization

fire, food, weapon, candle, light, water, iron, cold, steel, winter, night, animal

The use of (…) improved early man life in many ways. Cooking made his (…) food more tasty. He could improve his wooden (…) and tool by hardening their points over a flame. Camp-fires could frighten away wild (…).

Fire protected man from the (…). In coldest (…), man could stay warm in heated shelter.

Man also learned to use fire to make (…). Man first made (…) in fire.

Soon man learned that (…) could be boiled and that food could be cooked in boiling (…).

Fire also gave (…). Primitive man gathered around fires at (…). Then he learned to make (…), and later lamps that burned kerosene, whale oil, or other fuels.

2. Read the article about the meanings of the word FIRE. Do exercises after it.

Багатозначність слова fire і його переклад українською мовою

f i r e :

1) Вогонь, полум'я: ~ endurance – вогнестійкість, ~ point - температура загоряння, to catch ~ - загорятися; 2) Топка, піч: electric ~ - електрична піч; 2. Пожежа: forest fire - лісова ~; 3. Жар, лихоманка: St. Anthonys ~ - лихоманка Антонова (рожисте запалення);4. Пил, жвавість, запалення: sacred ~ натхнення; 5. Військовий, гарматний вогонь Running ~ - побіжний вогонь; 6. Блиск, сяйво: ~ of diamond - сяйво діаманта.

У пожежно-технічній термінології існують слова з коренем <fire> з різними значеннями:

вогонь:

- Fireproof - *вогнестійкий*
- Firebrick - *вогнестійка цегла*

пожежний; той, що використовується на пожежі:

- Fire boat - *пожежний човен*
- Fire brigade - *пожежна команда*

протипожежний:

- Fire alarm installiation - *протипожежна сигналізація*

A) Sort out the words into three groups according to their meaning:

fireguard, firescreen, fire escape, fire-fighter, fire-hook, fire hose, fire-hazardous, fire-extinguisher, firestorm, firerisk, fire-resistance, fire-hydrant, fireman, fire-protective, fire-break.

3. Fill in the gaps with suitable words from the brackets.

Fire was put to use by all (early, first, old) peoples. Many peoples worshiped fire. All thought that it was (sacred, saint), a gift from the gods. Most peoples had (myths, stories, news) that told how the gods gave fire to man.

Many myths speak of the striking of (iron, steel, coal) against stone to make fire. The Scandinavians believed that Thor, the god of thunder, struck a hammer against a piece of (flint, paper, flame). Another story is that Hermes, the god of the Lapps, hit his own head with a hammer to produce (sparks, drops, snowflakes).

The story of Prometheus, the Greek (hero, champion, rescuer) tells of his going to the home of the gods on Mount Olympus. He returned with a spark of fire hidden in his staff.

4. Fill in the gaps with suitable words from the box.

a)

Household	Special	Burning	Long	Loud	Important	High

In Mexico the Mayas and the Aztecs kept a fire burning on top of a (…) pyramid all the time. This fire, and all others in the country, was put out every 52 years. The fires were relit in an (…) ceremony. With the leaders of the country watching, the priests rubbed (…) dry sticks together. Sometimes it took a (…) time for them to make a spark. Finally, when the fire was started again, there was a (…) shout of triumph. A messenger rushed off with a (…) torch to relight the fire on the pyramid. People crowded about to light torches for their own (…) fires.

b)

Sacred	Large	Capital	Certain	Each	Local

The Greeks, the Egyptians, and the Romans kept fires burning in their temples. In the Temple of Vesta in Rome the (…) fire was cared for by priestesses called the vestal virgins. If the fire went out, all business was stopped until it had been rekindled. In Greece the (…) fire was kept burning in a (…) building in (…) town. The fire was cared for by the (…) chief. In the (…) city, the king himself tended the fire.

5**. Match the words in the left column with their explanations in the right column.**

A fireguard	is a building where fire engines are kept, and where firemen wait until they are called to put out a fire.
A firebrick	is a metal cylinder which contains water or chemicals at high pressure for putting out fire

Fire	is a screen made of strong wire mesh that you put round a fire so that young children cannot accidentally burn themselves and prevent burning wood or coal falling out.
A fire station	is an occurrence of uncontrolled burning which destroys buildings, forests, crops, etc.
A fire-storm	is a type of brick which cannot be damaged by heat and which is used to line furnaces.

A firebreak	when it occurs in a place that is burning after being bombed, strong winds rush into it to take the place of the hot air that is rising, causing the blaze to burn uncontrollably.
A fire extinguisher	is an area of open land in a wood or forest, which is intended to stop a fire from spreading.

6. Open the brackets. Use the correct form of the verb *to be*

1) It (to be) hard for a fire man to know how a fire behaves, because so many things can affect it. The strength and direction of the wind (to be) important factors.

2) Smoke (to be) a mixture that comes from burning of any kind of material, such as coal, wood, or petroleum.

3) After the fire (to be out), the fire man still have much work to do.

4) The heat-reflective suits (to be) fire resistant and coated with aluminium to reflect heat.

5) Radio (to be) important to the modern fire department.

6) The smallest unit of fire department (to be) a company of about 6 to 16 men.

7.Open the brackets. Use the structure *there is…, there are…*

1) In isolated forest areas, (there be) forest rangers on the look out for fires.

2) Forest fires (to be) a great danger, especially in the summer when (there be) long periods without rain.

3) There be) always some men on duty in fire station. The fire trucks always (to be ready) to go.

8. Put the verbs in brackets into the correct form.

Fire worship (to be) an ancient religious practice (to base) on the idea that fire (to be) sacred. Since early times, people (to worship) fire because it (to destroy, (to purify), and (to give) heat and light. Some people (to believe) a god or spirit (to inhabit) fire. The Parsis of India and other

followers of religion (to call) Zoroastrianism (to use) fire as a divine symbol. The ancient Greeks and Romans (to consider) fire one of the major elements that (to make up) the world. Today, many people (to build) bonfires on various occasions. This practice probably (to develop) from the ancient tradition of fire worship.

SPEAKING

1. Are the following statements true or false? Correct or prove the statements. Begin with:

I'm afraid that's wrong; that's not quite so; as far as I now; I think you are mistaken; on the contrary; according to the text:

1) Oxidation does not take place when oxygen unites with other substances.
2) Oxygen from the air may slowly unite with the fuel.
3) An explosion is really a slow increase in volume, caused by rapid burning.
4) Spontaneous combustion causes many fires.
5) We do not call process of oxidation *burning.*
6) When oxygen unites with iron, iron begins to melt.

2. Discuss the following questions together:

1. What do you know about fire?
2. What do you need to kindle a fire?
3. How old were you when you were able to kindle a fire?
4. Do all substances burn in the same manner?
5. What type of burning can be called spontaneous combustion?

CHECKING TASKS

1. Fill in the gaps with suitable words from the box.

Capital	Spontaneous	First	Man	Hot
Similar	Important	Early	Two	Dry
Burning	Household	Large	step	All
Human	Special	Great	High	Local
Sacred	Certain	Painful	Each	Spirit

Early Man and Fire

Peking man, who lived about 250,000 years ago, is thought to be the (…) human able to start and control fire. Being able to make and use fire was his first (…) toward civilization.

(…) man saw fire start when lightning hit a tree. Perhaps he also saw coal or the peat in marshes burn from (…) ignition. He saw fire spread and destroy (…) areas of grass, brush, and timber. He was frightened to see (…) beings and animals die in the heat and flames. But he enjoyed the warmth of a fire and soon learned that fire could be used.

After this, for hundreds of thousands of years, man carried (…) coals and (…) embers as he and his family moved from place to place. He learned that fire could make him warm and could make food taste better. He also learned that it could give him a (…) burn. In time, he learned that a spark could start a fire in (…) leaves and grass. He discovered, probably by accident, that (…) stones striking together could make the sparks to start a fire.

2. Read the questions. Write down your answers.

2. What is fire?
3. What is ash?
4. What is gas? Supply some examples.
5. What happens when natural gas, fuel oils or gasoline burn?
6. What produces the heat and flame of the fire?
7. How is carbon monoxide formed?
8. What is light and light energy?

3. Choose the correct subject in the sentences:

1) *Matches/ Smoking* usually cause the greatest number of fires each year in the United States.

2) *Many myths / A myth* speak of the striking of iron against stone to make fire.

3) When the *fire / fires* goes out, all business stops.

The use and control of fire and its products / The use of fire involve inventions fundamental to human society and culture

UNIT 4

WHAT FIRE PRODUCES

READING

Pre-reading activity

1. Get into two groups and read the text.

Group A is to write out the sentences that can be answers to the following questions:

1. What is the ash?
2. Why does the bottom of a pan often become black?

Group B is to write out the sentences that can be answers to the following questions:

1. Why do we usually buy coal with the lowest ash content?

2. Why is soot formed on the bottom of a skillet?

What Fire Produces

An entire piece of wood or coal will not burn, even if there is sufficient oxygen present. Most of us have taken the ashes from the stove, furnace, or fireplace. The ash, generally a mineral, is mixed with the fuel, but will not unite with the oxygen. Some fuels have a lower ash content than others. This is important to remember when buying coal because you want the coal with the lowest ash content, provided that it is as good in other respects.

Often the bottom of a pan or a skillet becomes black when it is placed over a fire. This is because of the unburned carbon, and soot. Soot forms when there is not enough oxygen present to burn all the carbon of the fuel. If a furnace produces great quantities of soot, some of the carbon of the fuel is not being burned, and is wasted. This can be remedied by seeing that sufficient air is supplied to burn all the carbon in the fuel.

Gases. Substances that burn in air are nearly always composed of two elements, carbon and hydrogen, or their compounds. For example, coal, coke, and charcoal are mostly carbon. Natural gas, gasoline, and fuel oils consist of many compounds of hydrogen and carbon. When these fuels burn, the oxygen of the air unites with the carbon and hydrogen to form carbon dioxide gas and water vapour. These usually mix with the air and disappear. The uniting of the oxygen with the hydrogen and the carbon is what produces the heat and flame of the fire.

Often, a deadly gas called carbon monoxide forms when there is not enough oxygen to burn the fuel completely. For example, when gasoline burns in an automobile engine some of this gas forms and comes out the exhaust pipe. If you are in a closed garage when this happens, you arc in danger of breathing this gas. Death may result. A person should never run the engine of an automobile in a closed garage. Smoke, like soot, is produced when too much fuel is added for the amount of oxygen present. It is unburned carbon going out the chimney. Smoking furnaces are wasteful because all the fuel is not burned and the heat energy is lost. The smoke is also a nuisance, because it makes a neighbourhood dirty.

Light. Most of the energy caused by a fire goes into heat, but some of it goes into light. The light results either because the carbon particles in the flame become so hot that they give off light energy, or because the gas that is burning is a type that gives off light.

VOCABULARY PRACTICE

1. 1. Look at the words given below.

Match antonyms to the words given in group A.

Match synonyms to the words given in group B.

Which words can you translate without consulting the dictionary?

A.

light	– slow,
rapidly	– slowly
to unite	– to separate
to obtain	– separation
rapid	– to give away
union	– cold
heat	– darkness

B.

gasoline	– danger
threat	– benzene, petroleum, fuel
to flame	– to burn, to set the fire

2. Find the international words in the sentences and translate them. Pay attention to the pronunciation of these words. What is the difference in Ukrainian and English variants of pronunciation?

As a substance burns, heat and light are produced.

This process may be described by any of the three words.

All substances do not burn in the same manner.

Most of the energy caused by a fire goes into heat

Antoine Lavoisier was a French chemist, who proved that burning is the result of the rapid union of oxygen with other substances.

Visible smoke generally accompanies fire.

Heat presents a physical danger to man because of hot gases and radiation.

3. In the following line choose one word that doesn't belong to the group and explain why you think so:

1. oxygen, wood, carbon, hydrogen
2. iron, lumber, oil, magnesium
3. gas, coal, charcoal, wood

Divide the words into the following groups: Chemical substances. Fuels. Gases. Mineral resources:

4. Match the words in the left column with their explanations in the right column:

1. A fire lighter ➢ is a burning pile of wood, coal or other fuel that you have made and set the light to, for example in order to keep yourself warm or cook food over.
2. Fire-fighting ➢ is a small block of material which burns easily, used to start a fire burning.
3. A firework ➢ is a small object with chemicals inside it that burns with clouded flames, sparks, or smoke when you light it and often makes loud noises too.
4. Bonfire ➢ is the work of putting off fires

5. Make up the sentences from the following:

1. Fireisactuallyabyproductofalargerprocesscalledcombustion.
2. Fireandcombustionaretwowordsusedinterchangeably.
3. Howeverfirefightersshouldunderstandthedifference.
4. Combustionistheselfsustainingprocessofrapidoxidationofafuel,whichproducesheatandlight.

Fireistheresultofarapidcombustionreaction.

6. Choose the correct word and fill in the gaps in the sentences:

1) Substances that burn in air are nearly always compounded of (two, twelve, twenty) elements.

2) Heat is the combustion product most responsible for the (beginning, spread, finish) of a fire in a building.

3) (Visible, invisible, black, white) smoke generally accompanies fire.

4) Early man used a flaming piece of (wood, coal, tree, grass) as a torch for lightning of his house.

5) Heat presents a (physical, material, moral) danger to man.

7**. Make sentences out of the following.**

Flashover

1. Flashoveroccurswhenflamesflashovertheentiresurfaceofaroomorarea.
2. Theactualcauseofflashoverisattributedtothebuildingofheatfromthefireitself.
3. Asthefirecontinuestoburnallthecontentsofthefireareaaregraduallyheatedtotheirignitiontemperatures.
4. Whentheyreachtheirignitionoccursandtheareabecomesfullyinvolvedinfire.
5. Thisactualignitionisalmostinstantaneousandcanbequitedramatic.

6. Aflashovercanusuallybeavoidedbydirectingwatertowardtheceilinglevelandtheroomcontent stocoolmaterialsbelowtheirignitiontemperatures.

6. Match each of the following terms with its definition:

To set smth. on fire	Something is burning and being damaged or destroyed by an uncontrolled fire.
To be on fire	To start burning in order to damage or destroy smth.
Fume	A substance or mixture of substances in a gaseous state used to produce light and heat
To inflame	Is the light that comes from a fire that you have lit.
Gas	To give off light suddenly or in transient bursts
Firelight	strong and unpleasant or harmful (= dangerous) gases, smells or smoke.

7. **Put the verbs in brackets into the correct form.**

1) Hundreds of valuable books (to go up) in smoke if this library (to catch) a fire.
2) If forest rangers (not to act) quickly, the fire (to get out) of control.
3) Often airplane patrols look for smoke. If a fire is spotted before it (to start) to spread, it (to be put out) quickly. But if the fire (to be) too big, fire fighters are either (to fly in) by helicopter or (to parachute) to the site of the fire.
4) The fire (to move) by jumping from tree to tree. When it (to reach) the fire line it (to have) no place to go and (to stop).
5) Then for days and sometimes weeks afterward, fire fighters (to go) over the area until (there be) no more burning embers.

8. Fill in the missing prepositions and adverbial particles. Find some more facts about fire destruction.

for(2)	***of (4)***	***in (4)***	***from***

Fire Destruction.

One of the worst fires (...) the United States was the Chicago, Illinois, fire (...) 1871. (...) three days it burned, destroying about 18,000 buildings (...) an area of three square miles (...) the centre (...) the city. About 100,000 people lost their homes and 250 lost their lives. On the same day that the Chicago fire started, another the worst fires (...) United States history began (...) Peshtigo, Wisconsin. (...) 24 hours the combination (...) a forest fire and a violent windstorm took the lives (...) 1,500 men, women, and children.

SPEAKING

1. The article you have read tells you about some problems in kindling fire. Get ready to discuss these problems.

Causes of Fire

Smoking and matches usually cause the greatest number of fires each year in the United States. However, serious losses result from blazes of electrical origin. Other leading sources of building fires—in descending order of number of alarms—include heating plants and cooking devices, open flame and sparks, children and matches, flammable liquids, and rubbish.

Work in groups to prepare and act out a role play "Fire – friend or enemy?".

Role 1.Teacher of chemistry: you are to make short report about nature of burning

Role 2. Methalurgist: you are to speak about burning used in industry.

Role 3. School fire inspector: you are to make short report about the most typical causes of fire.

CHECKING TASKS

1. Make up as many word combinations as possible with each of the verbs.

To make	sure
	air-conditioning systems
To check	the home safer
	electrical cords
To run	escape plans

2. Match each of the following fire safety terms with its definition:

Smoke detector	a device worn over the face to protect a person from breathing in poisonous (= toxic) gases.
Fire alarm	a long, flexible pipe made of rubber or plastic through which water is propelled.
Fire escape	an instrument used to find the presence of smoke which activates automatically when it detects smoke.
Gas-mask	a device used to spray water like that in a shower cabin.
Fume	a system which lets a fire brigade know about the outbreak of a fire.
Hose	a stairway on the outside of a building down which people may run away from a fire.
Sprinkler	strong and unpleasant or harmful (= dangerous) gases, smells or smoke.

3. Make the sentences from the words.

1. Themosteffectivemannerinwhichtofightfiresistopreventthemfromstarting.
2. Effectivefirepreventionandpubliceducationprogramsarethebestwaytominimizethehazards offireinthecommunity.
3. Thecornerstoneofanyfirepreventionprogrammustbeanaggressiveinspectionprogram.
4. Acarefullyplannedinspectionprogramcarriedoutbyconscientious,welltrainedpersonnelcan reducetheriskofmanyseriousfires.
5. Noemergencycontactwithciviliansalsogivesthefiredepartmentachancetobuildorreinforcea goodpublicimage.

4. Open the brackets.

1. The fire fighters must (to drain) the hose and (to put) it back on the trucks. They also must (to inspect) equipment and tools so they (to be ready) to use again.

2. Heat-reflective suits are worn by fire-fighters in special cases when they have (to walk) through flames.

3. The fire chief keeps in touch with the fire department headquarters so that he can (to get) more men or equipment if he (to need) them.

4. The fire insurance contract may also (to be written) to include an extensive list of perils in addition to fire.

5. Fire fighters must (to use) elevators or stairs to get to persons trapped on floors above the reach of the ladders.

6. Ladder company members ought also (to ventilate) the building to let out the smoke, heat, and gases that build up during a fire.

7. A variety of protective gear may (to be) necessary to provide maximum protection in the many different situations.

8. All departments should (to be) aware of the type of equipment needed for different exposures and have the equipment readily available.

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UNIT 5

MODERN FIRE AND RESCUE DEPARTMENT

READING

Pre-reading activity

Look at these headlines taken from different articles. What will you find out when you read the articles?

Professional Volunteer departments

Predominantly Volunteer Membership Corporations

Commercial Contract Fire Department

Special-purpose departments

Wholly Volunteer

Paid departments

These names can be sorted out into two groups. What groups?

JIGSAW READING

1. Get into two groups:

Group A is to read the text about <u>Fire Fighting Organization</u>

Group B is to read the text about <u>Kinds of Fire Departments</u>

Fire Fighting Organization

Fire departments, collectively called "the fire service" in the United States, are maintained by villages, townships, cities, or other governmental units, or by tax-supported fire districts. (Europeans speak of a unit as a "fire brigade," but they also use "fire service" as a collective term.)

Community departments may be fully professional, predominantly volunteer, or wholly volunteer. Fire fighting organizations also include the membership corporation, the commercial contract department, and special-purpose departments operated by industry or government agencies.

Professional. Communities of 10,000 or more in population commonly staff their departments with full-time employees. A typical professional department has a headquarters station (which may or may not house apparatus), a number of company fire stations strategically located, a large maintenance shop, a training centre, and a communications or fire alarm centre. The trend in larger cities is to combine administration, maintenance, training, and communications in a cluster of buildings. Operations of a paid city department are financed from general taxation.

Predominantly Volunteer. Communities with populations of roughly 2,500 to 10,000 are protected by departments that customarily are predominantly volunteer. The paid men maintain the apparatus, equipment, and stations, and upon receipt of an alarm go to the fire with the apparatus.

The call men or volunteers respond from their homes or place of employment and provide sufficient manpower to accomplish the needed tasks.

Wholly Volunteer. Rural or suburban areas below 2,500 in population operate departments that are usually staffed by truly volunteer personnel who are unpaid for their services. These men have banded together to help protect themselves and their neighbours against fire. They have a proud heritage of service and in many communities have become the leading social club as well.

To ensure their technical competence, these volunteers attend training programs operated by a state fire marshal's office, a vocational education department, or a firemen's association.

Membership Corporations. Taxing districts sometimes set up a membership corporation. This type of department owns its own buildings, apparatus, and equipment, and contracts its services to what may be termed "fire protection districts" or "contract districts." Usually the personnel is entirely volunteer.

Commercial Contract Fire Department.

A few fire departments - an insignificant number in the U. S. total - are of the commercial contract variety. They offer their services to subscribers as a profit-making business.

Kinds of fire Departments

The main kinds of fire departments are (1) volunteer, (2) paid, and (3) special purpose. About 27.000 volunteer and paid fire departments protect communities in the United States. Most of these departments are volunteer organizations. Special-purpose departments are maintained by certain government agencies and some private industries.

Volunteer departments provide protection mainly in small towns and rural communities. They are staffed by men and women who serve part time. Some departments have a few paid fire fighters but rely chiefly on volunteers. When a fire breaks out in the community, the volunteers leave their jobs or homes and rush to the fire station. In some departments, the volunteers are paid for their work, but in others they receive no pay.

Many volunteer departments have only enough equipment and volunteers for routine fires. In case of a major fire, departments from neighbouring communities help one another. Most volunteer departments are headed by a fire chief, who is either appointed by the mayor or elected by members of the department.

Paid departments serve chiefly in large cities. Some departments are organized on a county, district, or regional level. Paid departments are staffed by full-time fire fighters.

Paid fire departments in large cities have many fire-fighting companies, which operate from neighbourhood fire stations. Each company is commanded by a captain or a lieutenant. Several companies make up a *battalion* or a *district*. Battalions may be further grouped into *divisions.*

Large departments also have separate staffs that work in such areas as fire prevention, training, communications, and arson investigations. A fire chief, who is appointed by the mayor or some other city official, directs the entire fire department.

Special-purpose departments. The U.S. government maintains fire departments at all military bases and other large federal installations. These departments are trained to handle fires and other emergencies unique to a particular installation, as well as routine fires

Here are 14 questions for two texts. Find the questions on each text and answer them:

1. What is a division and how is it structured?
2. When does department own its own buildings, apparatus, and equipment?
3. Who provides fire protection in small towns and rural communities?
4. Which community is protected by predominantly volunteer departments?
5. What are trained special-purpose departments for?
6. What has a typical professional department?
7. How do men and women in volunteer departments serve?
8. What is the name for a unit of a fire department in Europe? How do Europeans call the smallest unit in the fire service?
9. Who is a commander of each company in paid fire departments in large cities?
10. How is the operation of a paid city department financed?
11. Who appoints the fire chief of a volunteer department?
12. Can fire service be a profit-making business?
13. What do the volunteers do when a fire breaks out in the community?
14. How is participating in volunteer fire departments viewed in some rural or suburban areas?

VOCABULARY PRACTICE

1**. Unscramble the words given in bold print.**

1. **Serwnad** were the first in American records to engage in home fire inspections.
2. The praefectus vigilum, predecessor of the modern fire chief responded to **ginceesmeer** in his chariot.
3. A fire **notervinpe** ordinance prescribed fines for dirty chimneys.
4. The **sirnunace** companies were quick to investigate and prosecute.
5. **Hminecy** viewers who neglected their duties were to be fined 6 shillings and replaced.
6. The Great Chicago Fire emphasized the need for sound **suttonniccor** employing a minimum of wood and other **ballammef** materials.
7. The Franklin Fire Insurance Company **niepsctde** drug stores, flax and hemp dealers, liquor

dealers, ship chandlers, coach and carriage builders, and dealers in varnish.

8. The Chicago fire followed a 14-week period of **toguhrd** and occurred during a windstorm later estimated to be of cyclone violence.

9. In 1889 the National Board of Fire Underwriters established a committee on fire departments, fire patrols, and water **lusupp** and began promoting fire **fatsey** work in the cities.

2. All the paragraphs in the text have been mixed up. Put them in the correct order and fill in the gaps, using the active vocabulary.

Fire Departments

a) Hundreds of years later, fire engines were equipped with p_____ operated by hand. These did not have much force and the streams of w_____ could not be thrown very far. Many colonial villages in the United States set up bucket b_____ when a fire broke out. Every man ran into the street with his b_____ and two lines were formed to the nearest water. B_____ full of water were passed along one line and thrown on the f_____ .The e_____ buckets were passed down the other line to be filled. There was a great d_____ of fire in the colonial settlements. Houses were made of w_____ and had thatched roofs. They b____ d____ quickly.

b) The first fire brigades were organized many centuries before Christ. In 24 B.C. the Romans used slaves for f____ f_____ and police work. The Romans also d_____ the first means of throwing a continuous stream of w____ Roman f_____ used axes, blankets, buckets, ladders, and poles.

c) In the middle 1800's steam f_____ e_____ were first used. The steam boiler and p_____ were on a wagon pulled by f____ or horses. In 1910 motor-driven f____ e____ came into use. By 1928 practically all horse-drawn e_____ had disappeared.

d) The problem of fighting f____ has led to the growth of f_____ d____ In the United States there are about 23,500 fire departments. Some of these have paid m_____. In smaller cities and towns the members are v_____ who serve without pay. About one out of ten of the 1,000,000 f_____ f_____ in the United States is a paid fireman working f_____ t_____.

3. Put the verbs in brackets into the correct form.

1) Airplanes (to spray) the fire with chemicals. Bulldozers and plows (to clear) a strip of land around the fire.
2) The firefighter (to turn) the nozzle and the spray (to concentrate) down to a stream.
3) He (to hurry) towards the fire exit.

4. Match the words in the left column with their explanations in the right column.

Fire department	A fireman who is not paid for his work in fire department
Fire control	An organization for preventing or extinguishing fires, especially a government division (as in a municipality)
Fire-warden	Is a building where fire engines are kept, and where firemen wait until they are called to put out a fire.
Volunteer	The control or extinction of fires.
A fire station	An official empowered to take measures against fires

5. Match the following synonyms if necessary, consult your dictionary.

the main kinds	to govern
to maintain	unit
rural communities	usual
to rush	salary
pay	fire commander
routine	to put out fires
fire chief	the basic types
company	to run
to handle fires	villages

6. Make up word combinations with the verbs and prepositions:

to speak of	a unit as a "fire brigade
to rely on	volunteers
to pay for	general taxation
to finance from	their homes
to respond from	their work
to protect against	fire
to staff by	men and women
to appoint by	the mayor
to be commanded by	divisions
to group into	a captain

7. Match the sentence beginnings on the left with the endings on the right.

Air Force bases	train fire fighters to deal with radiation emergencies.
Forestry federal and state agencies	train fire fighters to battle aircraft fires.
Nuclear power installations	maintain fire-fighting units to watch for and put out forest fires
Major airports	organize their fire departments.
Industrial plants manufacturing fuels or explosives	have a fire department to fight aircraft fires.

8. Open the brackets. Use the correct form of the verb.

1) Fire departments (to battle) fires in homes when another fire broke out in office buildings in a neighbouring street.

2) The men and women who (to work) for fire departments that evening also helped save people trapped in cars after that disastrous accident.

3) Rescuers (to save) victims of flood so they (to need) the help of fire-fighters very much.

4) That person (to prevent) the fire by enforcing fire safety laws, but his colleagues knew little about fire hazards.

5) When a fire broke out, all the people in the community (to rush) to the scene.

6) In colonial America each fire battalion was commanded by a captain, 7 fire companies (to make up) a battalion.

7) In early 1800's departments didn't have staff that (to work) in such areas as fire prevention, training, and arson investigations.

SPEAKING

1. Decide whether the following statements are true or false. If necessary - correct them.

Begin with:

- *I'm afraid that's wrong; you are not quite right;*
- *that's not quite so;*
- *I think, you are mistaken;*
- *as far as I know;*
- *on other contrary;*
- *I don't think so; according to the story.*

1. Vigils never served as the police force.
2. You can't believe, but scholars know a lot about the development of fire-fighting in Europe

before the Great Fire of London.

3. It's a pity, but insurance companies did nothing to protect their clients' property.
4. It's no use pulling down building next to the burning structure.
5. The wardens' chief's duty was to inspect chimneys for fire hazards and to patrol the streets at night and watch for fires.
6. Prominent citizens thought service in fire departments below them.
7. Hand pumps have never been replaced in the fire departments.
8. The USFA has nothing to do with the National Academy for Fire Prevention and Control in Washington D.C.

2. Work in pairs.

Discuss the following questions together, and then tell the rest of your class what you think.

1. What changes have there been in the fire fighting organization of Ukraine for the past 300 years?
2. What does the USA do better in organizing their fire service in your opinion?
3. Is it a good idea to have paid and volunteer fire departments?

CHECKING TASKS

1. Write an email about Fire Departments in Ukraine and in your city.
2. Write a paragraph about the main kinds of Fire Departments in Ukraine.

UNIT 6.

EMERGENCY SERVICES IN UKRAINE AND IN THE WORLD HISTORY.

READING

HISTORY OF THE 999 SYSTEM AND FIRE BRIGADES

Before automatic exchanges the public telephone system was based on large numbers of local manually operated telephone exchanges, many of which were found in local tradesmen's premises manned on a "sleeping watch" basis by the occupier. All calls, local or long distance, were connected manually by the exchange operators, since automatic dialling was then in its infancy. At that time Fire Brigades were also completely decentralised (organised in the form of local units) and created few communication problems. In cases of emergency subscribers called the local exchange , where upon the operator connected them to a local point for the receipt of the emergency calls. There was little if any need for the co-ordination of communications planning over a wide area. The 999 system came about via the Metropolitan Police in London as they found that their Police Stations were being overrun either by visitors to the station alerting them to emergency situations or trying to phone them in the growing trend of using the new invention, the telephone. Not every one

could remember or knew the telephone number of the local Police Station. In November of 1927 the general public in London were advised " if you have an emergency dial 0". When the operators answers ask for the service you require. The Metropolitan Police maintained this service till 1934 then they introduced their Information Room with the famous number of Whitehall 1212. Where all emergency calls ended up. Emergency calls via telephone kept increasing and telephone operators were unable to identify emergency calls from other operator service calls. As is normal a disaster of some description was required to prompt government action. In November of 1935 a fire occurred in London in which five people died, in the inquiry which followed it became apparent that a system was required that alerted telephone operators to emergency calls. A parliamentary Committee called the Belgrave Committee examined the problems and set up various experiments in London.

The 999 system open in London in July 1937, it was 1938 before it reached Glasgow. It was the first service of its type in the world.
There are two company's that look after the 999 telephone system, British Telecom and Cable & Wireless. The AMCs belonging to the GPO of yesteryear have been replaced by 15 Operator Assistance Centres (OAC) of British Telecom of today. Nation-wide these handle approximately 21 million emergency calls a year. This figure includes 6 million 999 calls made by mobile phones. It is anticipated that calls from mobile phones will grow to 12 million by the year 2000. These figures are quoted in a BT document issued to Emergency Services in 1996.

BT receive 33,000 calls each week mostly due to children playing and misdials.Cable & Wireless have three OACs and they dealt with 3 million emergency calls in 1996.

3**. Put the verbs in brackets into the correct voice and tense-forms. Read the text.**

Organization

The American National Red Cross (to be) a semiofficial agency of the United States. The President of the United States served as honorary chairman. A board of Governors (to direct) the activities of the organization.

American Red Cross national headquarters(to be) in Washington, D.C. Area offices (to be) in Alexandria, Virginia; Atlanta, Georgia; St. Louis, Missouri; and San Francisco, California. Every community in the country (to serve) by a local Red Cross chapter. (There be) more than 3.100 chapters.

The work of the organization, (to carry) on by a permanent staff and about 1,500,000 volunteers throughout the country. The money for Red Cross services (to contribute) by the public.

Red Cross Youth.

Young people (to serve) the American Red Cross through activities of the Red Cross youth, which (to include) student-members in more than 37,000elementary and high schools, plus students

in hundreds of colleges and universities. Besides (to serve) in their home communities, Red Cross Youth members (to send) gift boxes, correspondence albums, paintings, and other items to children in other countries. They also (to make) articles (to give) to soldiers and veterans in hospitals. Red Cross Youth members (to make part) in all Red Cross activities where young people (to need). Youth programs (to set up) tutoring partnerships with children, recruit teenagers for volunteer work in hospitals, and (to set up) volunteer projects in nursing homes.

4. All the paragraphs in this text are jumbled up. Rearrange them into the correct order. Fill in the gaps in these sentences with a suitable word the first letter of which it given. Read the text.

Canadian Red Cross Society.

The Canadian Red Cross Youth is a …. In international relief w…… Each year it provides a … to some 50 countries throughout the world.

The Red Cross in C… was established in 1896 as the first overseas b… of the British Red Cross Society. From this small b… developed the Canadian Red Cross Society. It was incorporated by an act of Parliament in 1909. the Society was r… by the International committee of the Red Cross as an independent national society in 1927.

Canadian Red Cross Youth has more than 400,000 m… in schools from Newfoundland to british Columbia. It's most interested in h… and c… children in Canada and in Unfortunate children overseas.

The Canadian Red Cross Society is a… in the provinces of Canada in more than 1,000 communities. The Canadian Red Cross provides disesler s… velerans' s… instruction in first a…, water s…, and home n… as well as travelling medical and dental clinics. The Red Cross also operates a nrtwork of 25 Outpost Hospitals and Nurting Stations for p… in areas that are for from other h…. A national free Blood Transfusion Service operates in all ten provinces

SPEAKING

Read the text. Discuss what you will do during a fire emergency.

During a Fire Emergency

On hearing a fire alarm, the first life safety survival tactics begins before opening the door. Instruct students to do the following:

Feel the top of the door with the back of a hand for heat. If it is not hot, open the door slowly while looking into the corridor at a level below the doorknob to avoid breathing in any smoke that may be present. If there is light smoke and no heat, crawl low to the exit and evacuate from the building, counting the number of doors to the stairwell. Take your room key with you. If you encounter heavy smoke and heat in the stairwell, use the alternate stairs, or go back to your room and follow steps A through D below.

After feeling for heat at the top of the door, feel the doorknob. If the doorknob is hot, do no open the door.

a) Stuff wet towels and clothing under the door. Continue sealing around the doorframe. If possible, continually wet the cloths.

b) Call 911. Give the exact location of the building - floor level and room number - and the number of people in the room.

c) Wave a white towel or clothing out the window to signal for attention.

d) If light smoke comes into the room, open double-hung windows six inches from the top and bottom. Breathe air from the bottom of the window. If the window is of the crank-out or slide type, open it a few inches. Do not break the glass. Fire and smoke from a fire below may enter the room.

Know the locations of the nearest exit (stairwell) and the alternate exit from your room.

Count the number of corridor doors to the exits to the left and right of your room, to assist you in locating the stairwells if and when you encounter smoke as you crawl low in the corridors.

After evacuating from the building, report to your designated area for an accountability check by the RA

You are a school fire safety instructor. Make up instructions what to do in case of fire using words below:

1. building the immediately leave.
2. open feels a that hot never door.
3. through floor a smoky going crawl when area on the.
4. your run if catch do clothes fire not.
5. any to return for do reason the building not.

Supply the explanations to the instructions using the extracts given below:

A. After you have escaped, call the fire department. If people are still trapped in the building, wait for the fire department to rescue them.

B. Do not try to fight the fire unless it is confined to a small area.

C. Before opening any door, place your hand on it. If the door feels hot, the fire on the other side may be blazing fiercely. You could be killed by the heat and smoke if you opened the door.

D. Smoke and heated gases tend to rise, and so they will be thinnest near the floor.

Running fans and spreads flames. Roll on the floor to smother the flames

CHECKING TASKS

1. Read these "pseudo friends of translators", write their translations and translate the word combinations given below:

Private	public buildings and private homes
code	a fire safety code ;
officials	under these codes;
to affect	fire department officials;
check	the officials check the electrical equipment;
note; to note	they note the number of exits;
	matters that affect fire safety.

2. Read the words, find the prefixes in them. Give the missing translation of the following words. Pay attention to the prefixes.

usual - звичайний, незвичайний - unusual

safe - безпечний, unsafe - _____

дозований - dosed, передозований - overdosed

loading - навантаження, overloading - _____

view - дивитися, review – _____

3. Make up word combinations:

to prevent – запобігати	plans for a new building
to reduce - знижувати	fires
to conduct - проводити	the code
to inspect - інспектувати	public buildings
to enforce - доглядати за дотриманням	fire losses

to review - оглядати, переглядати fire drills

to practice - практикувати investigations

4.Open the brackets. Use the correct form of the Present Indefinite Tense.

1) Smoke (to harm) health because of its effect on the nose, throat, and lungs. Smoke also (to make) cities (to look) dark and (to cut) out much sunlight.

2) In spite of all the improvements in fighting forest fires, millions of dollars of damage (to do) every year

3) When something (to go wrong) – a fire, medical emergency, water accident or any other threat to safety – Fire Department is there.

Often the fire chief (to keep in contact) with his men by two-way radios. He also (to keep in touch) with fire department headquarters

1 Math the words in the left column with their explanations in the right column.

1. torrent 2. epidemic	a) a large destructive sea wave generated by an earthquake ar volcanic eruption.
3. volcano 4. harm	b) to fall down or apart when the component parts cease to support one another.
5. accident 6. collapse	c) violently rushing stream; a great downpour of raim or great flow of a fluid.
7. strike 8. landslide	d) a mountain out of which hot melted rock, gas, steam, and ash sometimes burst through a hole called; a crater, coming up from inside the earth.
9. tsunami	e) the slipping down from a hillside or cliff of masses of earth and rock
10. incident	f) a disease which becomes widespread in a particular place at a particular time.
	g) injury, hurt
	h) to damage or destroy; to come suddenly and esp. violently
	i) a mishap; a chance event commonly catastrophe, subbering or damage.

2.What to Do During a Thunderstorm

If you are:	Then:
In a forest	Seek shelter in a low area under a thick growth of small trees.

In an open area	Go to a low place such as a ravine or valley. Be alert for flash floods.
On open water	Get to land and find shelter immediately.
Anywhere you feel your hair stand on end (which indicates that lightning is about to strike)	Squat low to the ground on the balls of your feet. Place your hands over your ears and your head between your knees. Make yourself the smallest target possible and minimize your contact it the ground. DO NOT lie flat on the ground.

UNIT 7
NATURAL DISASTERS

Pre-reading

Think of as many words as possible related to the disasters.

What disasters are natural?

What natural disasters can occur in Ukraine?

When and where was the last one?

Read the text quickly and say what natural disasters are mentioned in it.

Reading

Natural Hazards (Disasters)

A natural disaster is the consequence of a natural hazard (e.g. volcanic eruption, earthquake, landslide) which moves from potential in to an active phase, and as a result affects human activities. Human vulnerability, exacerbated by the lack of planning or lack of appropriate emergency management, leads to financial, structural, and human losses. The resulting loss depends on the capacity of the population to support or resist the disaster, their resilience. This understanding is concentrated in the formulation: "disasters occur when hazards meet vulnerability". A natural hazard will hence never result in a natural disaster in areas without vulnerability, e.g. strong earthquakes in uninhabited areas. The term natural has consequently been disputed because the events simply are not hazards or disasters without human involvement. The degree of potential loss can also depend on the nature of the hazard itself, ranging from a single lightning strike, which threatens a very small area, to impact events, which have the potential to end civilization.

A natural hazard is a situation which has the potential to create an event that has an effect on people.

They result from natural processes in the environment and some natural hazards are related - earthquakes can result in tsunamis, drought can lead directly to famine and disease, and so on.

An avalanche is a geophysical hazard involving a slide of a large snow (or rock) mass down a mountainside, caused when a buildup of snow is released down a slope, it is one of the major dangers faced in the mountains in winter. An avalanche is an example of a gravity current consisting of granular material. In an avalanche, lots of material or mixtures of different types of material fall or slide rapidly under the force of gravity.

An earthquake is a phenomenon that results from a sudden release of stored energy that radiates seismic waves. At the Earth's surface, earthquakes may manifest themselves by a shaking or displacement of the ground and sometimes tsunamis. 90% of all earthquakes - and 81% of the

largest - occur around the 40,000km long Pacific Ring of Fire, which roughly bounds the Pacific Plate. Many earthquakes happen each day, few of which are large enough to cause significant damage. Some of the most significant earthquakes in recent times include:

The 2004 Indian Ocean earthquake, the second largest earthquake in recorded history, registering a moment magnitude of 9.3. The huge tsunamis triggered by this earthquake cost the lives of at least 229,000 people.

The 2005 Kashmir earthquake, which cost 79,000 lives in Pakistan.

The 7.7 magnitude July 2006 Java earthquake, which also triggered tsunamis.

A Sumatran village, devastated by the tsunami that followed the 2004 Indian Ocean earthquake

A Lahar is a type of natural disaster closely related to a volcanic eruption, and involves a large amount of material, including mud, rock, and ash sliding down the side of the volcano at a rapid pace. These flows can destroy entire towns in seconds and kill thousands of people. The Tangiwai disaster is an excellent example, as is the one which killed an estimated 23,000 people in Armero, Colombia, during the 1985 eruption of Nevado del Ruiz.

A landslide is a disaster closely related to an avalanche, but instead of occurring with snow, it occurs involving actual elements of the ground, including rocks, trees, parts of houses, and anything else which may happen to be swept up. Landslides can be caused by earthquakes, volcanic eruptions, or general instability in the surrounding land. Mudslides, or mud flows, are a special case of landslides, in which heavy rainfall causes loose soil on steep terrain to collapse and slide downwards, these occur with some regularity in parts of California after periods of heavy rain.

A volcanic eruption is the point in which a volcano is active and releases its power, and the eruptions come in many forms. They range from daily small eruptions which occur in places like Kilauea in Hawaii, or extremely infrequent supervolcano eruptions (where the volcano expels at least 1,000 cubic kilometers of material) in places like Lake Taupo, 26,500 years ago, or Yellowstone Caldera, which has the potenetial to become a supervolcano in the near geological future. Some eruptions form pyroclastic flows, which are high-temperature clouds of ash and steam that can trial down mountainsides at speed exceeding an airliner.

Floods are among the most frequent and costly natural disasters in terms of human hardship and economic loss. As much as 90 percent of the damage related to all natural disasters (excluding droughts) is caused by floods and associated debris flows. Most communities in the United States can experience some kind of flooding. Over the 10-year period from 1988 to 1997, floods cost the Nation, on average, $3.7 billion annually. The longterm (1940 to 1999) annual average of lives lost is 110 per year, mostly as a result of flash floods.

VOCABULARY PRACTICE

1. Math the words in the left column with their explanations in the right column.

1. torrent 2. epidemic 3. volcano 4. harm 5. accident 6. collapse 7. strike 8. landslide 9. tsunami 10. incident	a) a large destructive sea wave generated by an earthquake ar volcanic eruption.
	b) to fall down or apart when the component parts cease to support one another.
	c) violently rushing stream; a great downpour of raim or great flow of a fluid.
	d) a mountain out of which hot melted rock, gas, steam, and ash sometimes burst through a hole called; a crater, coming up from inside the earth.
	e) the slipping down from a hillside or cliff of masses of earth and rock
	f) a disease which becomes widespread in a particular place at a particular time.
	g) injury, hurt
	h) to damage or destroy; to come suddenly and esp. violently
	i) a mishap; a chance event commonly catastrophe, subbering or damage.

2. Match the disasters or accidents with the headlines.

Avalanche

Drought

Typhoon

Famine

Volcanic eruption

Shipwreck

a) Storms and high winds leave thousands homeless.

b) Crew members missing as liner sinks

c) Speeding wall of snow sweeps away skiers.

d) Crops fail as dry weather continues.

e) Lava threatens town.

f) Food aid urgently needed

3. Group up the words in the box according to the columns below.

Droughts Tornadoes Earthquakes Heat waves Fires Blizzards Hurricanes Whirlpools Landslides

Tsunamis Floods Hailstorms Ice storms Volcanic eruptions

Weather Disasters	Water Disasters	Land Movement Disasters

4. Complete the sentences:

a) Natural disasters teach us…

b) Our planet suffers from…

c) Every year people in Ukraine lose their …

d) Newer stay away from…

e) A severe storm is characterized by…

f) A blizzard is characterized by…

g) An earthquake is characterized by…

h) Tsunami is characterized by…

Speaking

1. a). Read the pieces of news and refer them to the disasters:

Tsunami

Floods

Typhoon

Eruptions

1. For more than a month now, parts of the Somerset Levels – low-lying plains in southwestern England where locals are accustomed to a certain amount of flooding - - have been underwater. Villages have became islands, residents have been cut off from each other, and farm fields are now at the bottom of shallow lakes. Many Somerset residents blame not only heavy rainfall, but the government's failure to dredge rivers and mount a rapid response. Gathered here are recent images from the Somerset Levels, as they expect even more wet weather in the coming days.
2. MANILA, Feb. 16 (UPI) – Millions of people in the Philippines are still in need of urgent assistance 100 days after Typhoon Haiyan hit the island nation, the United Nations says. " The authorities, U.N. agencies and non-governmental organizations, and the Filipino people should be commended for the pace of progress that we have seen in the first 100 days. But we cannot afford to be complacent " said Luiza Carvalho, U. N. resident and humanitarian coordinator for the Philippines. Carvalho commended the government of the Philippines for its response to the Nov. 8 storm that killed nearly 6,000 people and left 4.1 million others displaced. She also noted that the

United Nations and its partners helped provide food, medicine, water and sanitation and hygiene assistance to those in need.

" We distributed tents and tarpaulins so that 500, 000 families would have some from of a roof over their heads and implemented emergency employment programs that helped them get back on their feet and pumped money into local economies, " she said, adding that while ensuring that farmers were able to go back to their fields in time to plant, the U.N. and partners also helped remove more than 500,000 cubic meters of debris from hard-hit Talcoban alone.

3. Well, that didn't take long. Two days into the new year, having barely had time to celebrate that we survived 2012 despite the apocalyptic predictions, we are being introduced to the new Thing to Be Feared for 2013: Iceland. And not by some crackpot reality show; by PBS. No, Iceland is not, as far as we know, working to develop nuclear or biological weapons. Apparently it could blow up at any second because it is full of volcanoes with a history of doing so.

In consecutive hours on Wednesday night, an installment of " Nova" and then premier episode of a six-part series called " Life on Fire" make clear that Iceland is a seething caldron on the verge of going kablooey , and that Icelanders aren't the only people who should be worried about this.

4. The earthquake that generated the great Indian Ocean tsunami of 2004 is estimated to have released the energy of 23,000 Hiroshima-type atomic bombs, according to the U.S. Geological Survey (USGS).

Giant forces that had been building up deep in the Earth for hundreds of years were released suddenly on December 26, shaking the ground violently and unleashing a series of killer waves that sped across the Indian Ocean at the speed of a jet airliner. By the end of the day more than 150,000 people were dead or missing and millions more were homeless in 11 countries, making it perhaps the most destructive tsunami in history. The epicenter of the 9.0 magnitude quake was under the Indian Ocean near the west coast of the Indonesian island of Sumatra, according to the USGS, which monitors earthquakes worldwide. The violent movement of sections of the Earth's crust, known as tectonic plates, displaced an enormous amount of water, sending powerful shock waves in every direction.

b). Work in groups. Discuss the following questions.

What information is offered in these peaces of news?

How often do you read or hear the similar information?

What are possible consequences of different natural disasters?

What measures can be taken to avoid natural disasters?

2. Work in pairs. Discuss the questions below.

a) Have any of these natural disasters ever happened in Ukraine? When? How serious were they?

b) Have you heard any news stories about them happening anywhere else in the world?

c) Which of the disasters do you think are ‘acts of God? Which are sometimes the result f human actions?

d) Have any of the countries near Ukraine suffered a national tragedy recently?

e)Would you feel comfortable going on holiday somewhere that had been affected by a disaster? Why/why not?

3. a) Role-play the situation in pairs.

Imagine you live in the place which has been affected by one of te disasters. A friend is going to call you to ask how you are. You’re going to tell him/her what’s happened. Before you start, think of 5 questions you expect them to ask you about the situation.

b) Change the roles and role-play another similar situation.

4. a) Imagine you are going to take part in Survival! You are allowed to take a survival pack containing twelve items. Work individually and tick the items you would like to take with you.

batteries	insect repellent	sunglasses
blanket	knife	sunscreen
bottled water	magnifying glass	tent
clean clothes	matches	toilet paper
compass	mirror	toothbrush
camera	mobile phone	torch
energy bars	pencil and paper	umbrella
fishing rod	rope	water purification tablets

b) Work in groups. Each person explains to the rest of the group which twelve items he/she would take and why.

c) Try to agree on the best list of twelve items. Explain your group’s choice to the rest of the class.

Writing

1. Work with a partner. Think about the building you are in now and write down what you should and shouldn’t do if there is a fire. If you do not know, find out!

We should…

We shouldn't…

2. Imagine that you can save one thing in your home from a fire. Write a paragraph about what you would save and why.

The most important thing to me is my violin. I've had it for a long time, and it belonged to my father. It's a beautiful instrument and impossible to replace, so I would save it in a fire.

CHECKING TASKS

1. **Write any of the following compositions using 150-200 words.**

- Where do you think there might be volcanic eruptions, tornadoes, earthquakes, blizzards hurricanes, tsunami in the future? Why?
- Do you think scientists will one day find ways of stopping these disasters? How best could they help us?
- Environtmental problems in Ukraine and possible ways out of them.

2. **Project.**

   If any disaster did happen, what do you think you could do to try and survive? Work in groups. Choose a disaster to discuss, then think about food, housing, heating, and clothing. Tell the group your ideas.

UNIT 8

KINDS AND CAUSES OF INDUSTRIAL ACCIDENTS.

READING

Nuclear Power Plant Emergency

Nuclear power plants use the heat generated from nuclear fission in a contained environment to convert water to steam, which powers generators to produce electricity. Nuclear power plants operate in most states in the country and produce about 20 percent of the nation's power. Nearly 3 million Americans live within 10 miles of an operating nuclear power plant.

Although the construction and operation of these facilities are closely monitored and regulated by the Nuclear Regulatory Commission (NRC), accidents are possible. An accident could result in dangerous levels of radiation that could affect the health and safety of the public living near the nuclear power plant.

Local and state governments, federal agencies, and the electric utilities have emergency response plans in the event of a nuclear power plant incident. The plans define two "emergency planning

zones.” One zone covers an area within a 10-mile radius of the plant, where it is possible that people could be harmed by direct radiation exposure. The second zone covers a broader area, usually up to a 50-mile radius from the plant, where radioactive materials could contaminate water supplies, food crops, and livestock.

The potential danger from an accident at a nuclear power plant is exposure to radiation. This exposure could come from the release of radioactive material from the plant into the environment, usually characterized by a plume (cloud-like formation) of radioactive gases and particles. The major hazards to people in the vicinity of the plume are radiation exposure to the body from the cloud and particles deposited on the ground, inhalation of radioactive materials, and ingestion of radioactive materials.

Radioactive materials are composed of atoms that are unstable. An unstable atom gives off its excess energy until it becomes stable. The energy emitted is radiation. Each of us is exposed to radiation daily from natural sources, including the Sun and the Earth. Small traces of radiation are present in food and water. Radiation also is released from man-made sources such as X-ray machines, television sets, and microwave ovens. Radiation has a cumulative effect. The longer a person is exposed to radiation, the greater the effect. A high exposure to radiation can cause serious illness or death.

Although the risk of a chemical accident is slight, knowing how to handle these products and how

Answer the questions

1. What is radioactive material?
2. When do radioisotopes form?
3. In what form do radioisotopes emit radiation?
4. Exposure to radiation can cause cancer, can’t it?
5. What has underground testing done to fallout?
6. What scattered across the Western Hemisphere in 1986?
7. What do all nuclear explosions produce?
8. What can the fireball vaporize?
9. What forms under the fireball when it rises?
10. What may be lifted up through the atmosphere along with the fireball?
11. What happens to the vaporized materials?
12. How is fallout described?
13. What can be considered local fallout?
14. What are hot spot?
15. What does distant fallout consist of?
16. Where do winds generally blow in an eastward direction?

17. What may carry fallout to the earth?
18. Why is fallout hazardous?
19. In what way can people protect themselves from radiation?
20. Why did distant fallout increase to alarming levels in early 1960's? Was it eliminated?
21. What materials should be used for construction of fallout shelter?
22. What other buildings can provide protection from fallout?
23. What can be obtained from the Federal Emergency Management agency in Washington?

VOCABULARY PRACTISE

1. Fill in the missing words in the appropriate form.

1. When someone inflicts a wound, fracture or other physical hurt on somebody he _____ that person.
2. Six other _____ were still erupting.
3. That table will _____ if you sit on it.
4. A _____ is a lot of water falling or blowing rapidly or violently.
5. _____ is that which follows something and arises from it.
6. I was proceeding through _____ of rain.
7. A place or region that is _____ has a lot of volcanoes or was created by volcanoes. These lands are ____ and were formed comparatively recently.
8. As far as I know, Mount Erebus is an active _____.
9. _____ is an occurrence, generally unpleasant, which is widespread or intense.
10. Don't worry; they'll come to no _____.
11. A person's indirect power over men, events or things is called _____.
12. To injure physically (usually objects) means to _____ them.
13. _____ is a great sea wave produced by submarine earth movement or volcanic eruption.
14. The building was destroyed by a stream whish swelled to a raging _____ when the rains came.
15. Before the rains meeting could end _____ rain began to pour.

2 Match the words in the left column with their synonyms or explanations in the right column:

vaporize	radioisotopes
radioactive material	to give off
fission	break down
decay	explosion

release	return to the earth
blast	splitting
settle over the earth	to turn into gas
	fallout
	emit

3. Read the following text about fallout and match the headlines given in the box to the appropriate paragraph.

Fallout is radioactive material that settles over the earth's surface following a nuclear explosion in the atmosphere. It consists of atoms known as *radioactive isotopes* or *radioisotopes.* These isotopes form from the *fission* (splitting) of uranium or plutonium in a nuclear weapon. Radioisotopes also form when radiation that results from the explosion causes other atoms nearby to become radioactive.

After the explosion, the radioisotopes in the air, on the ground, and in the bodies of human beings and other organisms *decay* (break down) into more stable isotopes. They do so by emitting radiation in the form of alpha particles, beta particles, and gamma rays. Exposure to large amounts of radiation can result in immediate sickness and even death. Exposure to radiation over longer periods can cause cancer and damage genes.

The testing of nuclear weapons in the atmosphere once produced large amounts of fallout. Today, fallout has been almost eliminated by underground testing. However, a serious accident in a nuclear reactor can release the same radioisotopes that occur in fallout. In 1986, an explosion and fire at the Chernobyl nuclear power plant in Ukraine released radioisotopes that scattered across the Western Hemisphere.

How fallout is produced. All nuclear explosions produce a giant fireball of intensely hot gases. Everything inside the fireball or in contact with it is *vaporized* (turned into a gas). When an explosion occurs close to the earth's surface, the fireball vaporizes soil, vegetation, and buildings. It then begins to rise, carrying the vaporized material with it. As the fireball rises, a low-pressure area forms beneath it. Air rushes in to fill this partial vacuum carrying along with it dust, dirt, and other small particles. Much of this debris may be lifted up through the atmosphere along with the fireball.

As the vaporized materials rise and cool, some of them condense into solid particles. Atoms of the various radioactive elements produced by the explosion cling to these particles. These radioisotopes eventually return to the earth as fallout. Fallout particles range in size from fine invisible dust to ash of snowflake size.

SPEAKING

Accident, Incident

Discuss the article and find the correct answer.

An **accident** is something that happens unexpectedly or by chance, especially something unpleasant, undesirable.

Her father was killed in a car accident.

There was a serious railway accident near London yesterday.

He had an accident at work. A crate fell on him and injured his shoulder.

(Such accident are officially called industrial accidents)

. – John's left the door unlocked.

. – I'm sure it was an accident.

- Oh, don't worry. Accident will happen.

By accident is used in the same sense as accidentally in such sentences as:

Our luggage was sent on to Rome by accident.

An **incident** is an event, especially one of relatively minor importance. It is not necessarily unexpected or unpleasant.

There were several amusing incidents during the journey. In one of them Alan got off the train to buy a newspaper and nearly got left behind.

She told us about an incident in her childhood which had made a deep impression on her.

He tends to exaggerate the importance of minor incidents.

Incident is also used more specifically to denote a relatively minor hostile act, for example, a protest, an attack, a clash between small numbers of troops.

The Conservative candidate was shouted down in an incident at last night's election meeting.

A bomb exploded in a department store in Londonderry yesterday. No one was killed but several people were injured in the incident.

There have been several border incidents during recent weeks.

The incident in the restaurant shows Brian's character very clearly.

Incidental means "occurring as an occasional part, accompanying but not forming an essential part."

That conversation was purely incidental. Everything had been decided long before.

He was given an extra $50 to cover incidental expenses.

Incidentally means "by the way".

I'm sure you'll enjoy the book. Incidentally, the author went to the same school as my brother.

2. Which of the two words accident or incident would you apply to the following situations?

1. Your mother burns herself with an electric iron. 2. You leave the key in the lock of your front door. 3. There is a confrontation between some strikers and the police. 4. Some workmen on a building site are injured by falling bricks. 5. During a performance of "Hamlet" a cat walks onto the stage. 6. A bomb explodes in a street in central London. 7. A friend of yours drops tea on a book which you have lent him. 8. Some foreign soldiers are driven back by border guards. 9. A car crashes into a tree. 10. While walking along the street you are stopped by a man who mistakes you for a friend of his. 11. A forest fire is started by a cigarette end thrown down by a hiker. 12. A holiday-maker is drowned while bathing. 13. A customer in a shop in a shop is unjustly accused of stealing. 14. An intruder manages to get into Buckingham Palace. 15. Your sister slips on the ice, falls and breaks her arm.

CHECKING TASKS

1. Fill in the gaps with the words below.

trauma, wound, injury, harm, damage, breakage

1) Motorcyclists without helmets run the risk of serious_____
2) The fire caused so much _____to the house that the owners had to have it rebuilt.
3) I think that it will be hard for Andy to recover from the _____of witnessing such a terrible accident at such a young age.
4) The soldier had a deep bullet_____ in his leg and was desperately calling out for help.
5) Miraculously, the collapsed roof did no serious _____ to the little girl who had been hiding under the bed.
6) These fragile items are insured against_____

repair, cure, heal, treat

1) The cut on my knee _____well, but I've got a scar now.
2) Grandma's remedy of hot tea and honey managed to _____my sore throat.
3) The doctor _____the patient for minor burns and bruises.
4) The cottage roof collapsed during the earthquake, so they had to _____it.

2. Match the beginnings with the endings and say whether they are parts of a story or a newspaper report, justifying your answers. Think of suitable headings for the news reports.

Summary of all disasters

…ENDINGS
A) Everyone breathed a sigh of relief as the police officers handcuffed the man and led him away. 11 couldn't believe what had just happened. We left I the restaurant as soon as we could after our jewellery and money had been returned to us.
B) Steven was taken to the local hospital where he was found to be suffering from shock. He later said, 'Til never climb anything so high again and I'll definitely stay away from birds' nests in future."
C) An investigation is currently being carried out to discover why the structure of the building was so weak. Details of this will be released in due course.
D) I looked up at the clock. It was 5 p.m. I gathered my things, put on my coat and walked to the lift. I felt tired and hungry, and I just wanted to get home. The doors of the lift opened and I stepped in. As it was going down, it stopped suddenly and the lights went out. It was stuck. "Why me?" I thought, as I angrily pressed the alarm button.
E) Brian Wilkins, who examined the wreck, said the *Deep Blue* had been "an accident waiting to happen" and should not have been at sea. Rescuers are continuing their search for the six missing crew members.
F) Finally, after a long trip, he arrived at Middleton Station, tired and exhausted. He was glad that he had made it there alive.
BEGINNINGS…
1) A newly-built medical centre collapsed in last night's hurricane. The Mary Rose Centre in Pinner, North London was completed only two months ago but is now only a heap of concrete and twisted steel.
2) We entered the busy restaurant at lunchtime. It was packed but we soon found a table and sat down. It was so noisy and crowded that we didn't notice the peculiar man sitting behind us.
3) On a stormy day in September, Christopher left his home town-to go to university in another city. "Don't forget to call us when you get there!", his mum shouted as the train pulled away from the platform.
4) A 14-year-old boy was rescued from a cliff face in Hunstanton yesterday. The boy, Stephen Matthews, had climbed up the cliff to look at a bird, but got

trapped. He was saved by a rescue team which managed to reach him by helicopter.
5) Rescuers are continuing their search for six men who have been lost at sea. Yesterday morning at 10:30 the cruiser Deep Blue sent out a distress signal to the coastguard and then disappeared from the radar screens thirty miles off the south-west coast of Ireland.
6) "Watch where you're going, lady!", the man shouted and quickly drove away. I held my umbrella tightly, stepped back, and waited for the traffic light to change. Somehow I knew this was going to be a miserable day.

.3 Match the idioms with their definitions.

IDIOMS
1) head for a fall
2) break one's back
3) have/get one's fingers burnt
4) lightning never strikes in the same place twice
5) out of the frying pan and into the fire
DEFINITIONS
A) to work or try extremely hard
B) to do sth which will result in failure
C) from a bad situation to one that is worse
D) the same accident/disaster won't happen to the same person twice
E) to suffer because of doing sth without first considering the (usu negative) results

4.Complete the following text with the correct words derived from the words in bold. The first one has been done as an example.

The island of Madagascar was in a state of total (0) ***...****devastation****... (devastate)*** yesterday after Hurricane Geralda wrecked millions of dollars worth of land and property over a two-day period.

The island was lashed by **(1)_____*(torrent)*** rain and winds of up to 350 kilometres per hour (220 miles per hour). Seventy people were killed and 500,000 were left **(2) _____ *(home).*** In the city of Toamasina alone, 80,000 people lost their homes.

The main **(3) _____*(commerce)*** port of the island was almost destroyed and 70 per cent of the island's farmland was completely **(4) _____ *(flood).*** There were **(5) _____ *(heartbreak)*** scenes as people returned to the **(6) _____*(flatten)*** ruins that were once their homes.

Hurricanes gather speed and strength over water, and Geralda travelled over a large area of water before it hit the island of Madagascar. This is part of the reason why the storm struck so **(7) _____*(severe).***

Experts say that earlier ***(8)*** **_____*(warn)*** would not have prevented the damage, but steps are now being taken to reinforce many of the **(9) _____*(damage)*** areas in order to be better prepared should such a **(10) _____*(power)*** storm hit again.

UNIT 9

FIRE FIGHTING EQUIPMENT

READING

Pre-reading activity

Two friends are going on a hike. They have made-up a list of things which they will need in a camp. Look at this list. What tools will they really need? Use your dictionary to check up the words you don't know.

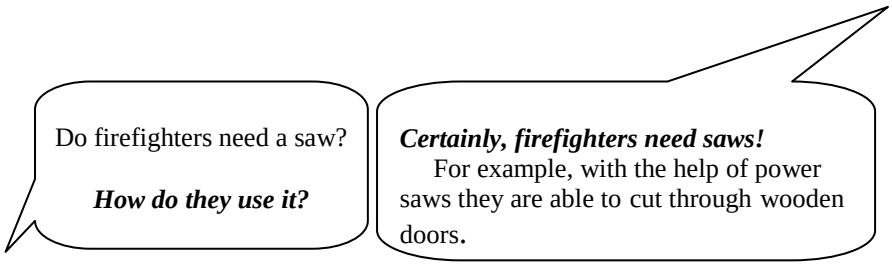
- ✓ a floodlight
- ✓ a ladder
- ✓ an electric generator
- ✓ a boat
- ✓ axes
- ✓ a carnival mask
- ✓ helmets
- ✓ a large hose
- ✓ a canvas tent
- ✓ rubber coats and boots
- ✓ a first aid box
- ✓ a saw

1. Work in pairs.

Look at the example and give a definition for any three items on the list.

Example: <u>A first aid box</u> is a box with different medicines and medical materials to be used in an emergency.

Ask each other what items could be used in fighting fires.



3. Now read the text. Write down all the names of the tools and equipment used by fire-fighters.

Fireman's Tools and Equipment

Fire fighters need special tools for such tasks as forcing open locked doors or cutting through barred windows. Some every-day tools have been changed to meet the special needs of firemen. For example, fire axes are designed for cutting, prying, digging, and battering in addition to chopping. Firemen wear gas masks to protect them from smoke and fumes, and large, sturdy helmets for protection from falling debris. The helmets have broad brims that keep them from being drenched by water spray. Firemen also wear heavy canvas or rubber coats and rubber boots to keep from getting wet.

Firemen fight small fires with *booster* lines, or small lines of hose that look like large garden hoses. They use medium-size hose for fires in one or two rooms of a house, in a small store, or in some other limited area. Fire fighters use a large hose about 2 or 3 inches in diameter to battle flames in large buildings. Nozzles vary from small types that a man can hold in one hand to large *master-stream nozzles* that are mounted on trucks or extension towers. Master-stream nozzles sometimes require several large hose lines to supply enough water for a hard-hitting stream that will put out a big fire.

Ladders rank among the fireman's most important tools. Fire fighters use wood, aluminium, or steel *aerial ladders* with sections that can be extended as high as 100 feet into the air. Firemen use the ladders in battling flames and rescuing persons trapped on upper floors. The bottoms of these ladders are attached to aerial-ladder trucks. A powerful motor on the trucks raises the ladders. The trucks also carry other ladders of various sizes that can be raised by hand.

VOCABULARY PRACTICE

2. Odd man out. In each line choose one word that doesn't belong to the group and explain why you think so:

a) Fire axe – air pressure gauge – pump – hose – nozzle;

b) ladder – hose connection – storage compartment – booster line;

c) hammer – crowbar – axe – bolt cutter – fireguard – pike – power saw;

d) Gas mask – protective gloves – asbestos mat – water-resistant boots – fire coat – heat reflective suit;

3.Unscramble the words given in bold print. Read the text.

Fire Fighting Equipment

Modern fire departments have engines which can **mupp** from 500 to 1,500 gallons per minute.

Usually a **mupper** has a water tank, different size **hesso**, fire **saex**, fire **hesserngtuixi**, **losnezz**, **osolt**, and other equipment. A fire company usually has an **lireaa derlad** truck with a power-raised **derlad** that can reach up 65 to 100 feet or more. The truck also will carry long extension **desrlad** and scaling **desrlad**. There are also trucks with elevating **farlpmots** that serve as mobile water **woters**. They reach up to 85 feet or more.

There is special **tempuniqe** for breaking in doors. There are **wepro** saws, electric **tesagerron**, floodlights, **sent**, and rescue **tempuniqe**. Many fire departments have an oxygen resuscitator to revive anyone who has been overcome by **mesok**. They also have special **crusee** or "squad" trucks to supply electric **wepro** and light while fighting the fire.

Big cities and airports often have chemical trucks to fight fires. To prevent fires airport **shrac** trucks spread **maof** on a plane that is forced to make a **shrac** landing. Other trucks carry special chemical **hesserngtuixi** for oil fires and electrical fires.

For fires in docks and harbours, many fire departments have fire **sotab**. These have powerful **smupp** that can quickly pour water on a fire. They are used when a ship catches fire or when there is a fire near the harbour.

4. Make up the correct word combination:

to extinguish	foam
to spread	fire safety
to teach	flame
to prevent	for fire hazard
to inspect	fire

5. Match the tools with the truck which carries them:

fire axe fire extinguisher resuscitator nozzle hydrant intake aerial ladder floodlights power saw water tank	a ladder truck a pump truck (pumper)

electric generators scaling ladder	

6**. Put the verbs in the brackets into the correct form.**

1. During that fire firefighters (to wear) protective clothing which (to include) helmets, knee-length coats, gloves and boots. The clothing (to protect) fire fighters from flames, water, and other job hazards.

2. – We need axes and crowbars!

– Wait a moment! Now our local fire truck (to carry) a variety of forcible entry tools, such as axes and crowbars

– It's a good news! Just look, we (to use) a portable ladder to break into a building or room!

3. In the past the equipment on fire trucks (not to include) first-aid kits, air cylinders and masks, and smoke ejectors.

4. Fireman used the ladders in battling flames and (to rescue) persons trapped on upper floors. A powerful motor on the trucks (to raise) the ladders.

5. The members of a ladder company (to spread) canvas or rubber covers over such property to prevent water damage, while the rescuers saved people trapped on the upper floor.

CHECKING TASKS

1. Write any of the following compositions using 100-150 words.

- The most important fire fighting equipment and tools. Make up a glossary of fire fighting equipment.
- What does the Personal Protective equipment consist of? Describe all items.
- What does your First Aid Box consist of? Describe all items.

2. Project.

Work in groups. Make a Top Five List of the most important firefighting tools. Compare your list with another group and discuss the results.

UNIT 10

FIRE FIGHTING APPARATUS

READING

Pre-reading activity

What fire fighting apparatus do you know? How are these machines used in fire fighting? What kind of fire trucks should be improved in future?

Read the text and find the answers to the following questions in the text:

What equipment does the pumper have? How much water can it pump?

What does the ladder truck carry? How long are the ladders on the ladder truck?

What special trucks do the fire companies have?

Fire Fighting Apparatus

The basic unit of fire fighting apparatus is the pumper. The second most common piece of apparatus is the aerial ladder truck. The proportion of pumpers to trucks varies according to the needs of the community.

Other vehicles commonly employed in the fire service include rescue, salvage, and searchlight apparatus and water tank trucks (generally referred to as “tankers”). Fire departments in cities situated alongside oceans, lakes, and rivers usually operate fireboats as well.

Pumper. The pumper is frequently referred to by U. S. fire fighters as the “engine,” “rig”, or “pump.” In British terminology, it is the “appliance.”

A pumper fully equipped and manned by three to six men is the basis of the fire fighting unit known as an "engine (or pumper) company.” Variations of the standard pumper include grass and brush fire pumpers, expressway emergency units, and airport crash trucks. Crash trucks carry large quantities of dry chemical extinguishing agents. Their hose is generally limited to two small hand lines because the major attack is made with large volume fixed turret nozzle.

Super Pumper. New York City employs the Super pumper - a tractor semi trailer that is a waterworks on wheels. The largest land unit ever designed for fire fighting, it can pump 8,000 gpm at 150 psi and is powered by a 600-horsepower diesel engine. The Super Pumper supplies water through 4 ½- inch hose either to several satellite hose turrets or to the regular fire fighting apparatus. It can be connected to several fire hydrants at once for water supply or can take water by suction from rivers.

Aerial Ladder Truck. To U. S. fire fighters, the aerial ladder is called simply "the truck"; in Europe, it is known as the "turntable' ladder." The U.S. version consists of a heavy-duty chassis on which is mounted a hinged metal ladder in sections capable of extension up to 100 feet (30 meters). European ladders are made with extensions up to 150 feet (45 meters).

Operation of the ladder is the same in all styles: a hydraulic pump driven by the vehicle engine provides power to raise the ladder to a vertical position, extend the sections to the required height, and rotate the ladder as required. When manned by three to eight men, these ladder units are referred to in the United States as a "truck company." In general fire department operations, a truck company responds with two to four engine companies at each alarm.

Elevating Platform. In the mid-20th century many departments in large cities adopted a new piece or fire apparatus - the elevating platform. From this platform, when it is raised high, streams of water may he directed on a fire by a nozzle at the top or by firemen standing on the platform. These platforms are highly manoeuvrable and may be used for rescue work.

Fireboats. Fire departments usually regard fireboats as special engine companies capable of supplying large volumes of water. Fireboats may fight ship or pier fires directly, or they may assist land companies by supplying large hose lines with water from a harbour or river. The boats are equipped with large pumps plus heavy turrets, nozzles, and quantities of large-diameter hose. Most modern fireboats are powered by heavy marine diesel engines (although some steam-powered boats are still in use).

Answer the questions:

1. What is the length of ground extension and aerial ladders? Give your answer in meters.
2. What does the pump truck have?
3. How much water can it pump in litres (1 imperial gal = 4, 5 l; 1 gal = 3, 7 l)?
4. What does the ladder truck carry?
5. What is the length of a ladder truck?
6. What special equipment does the fire company have?
7. What kinds of fireboats do fire departments usually use?
8. In what way are elevating platforms used for rescue missions?

VOCABULARY PRACTICE

1. The following words you met in your new text. Check them in your dictionary and fill in the gaps in the sentences given below.

suction (n) engine(n) rig (n) crash (n) turret (n) jack(n)

A. Modern fire departments have ____ which can pump from 500 to 1,500 gallons per minute.

B. To prevent fires airport fire trucks spread foam on a plane that is forced to make a ____ landing.

C. These ____ are capable of operating on paved highways.

D. A fire pump can be connected to several fire hydrants at once for water supply or can take water by _____ from rivers.

E. The boats are equipped with large pumps plus heavy _____, nozzles, and quantities of large-diameter hose.

Stability is provided by a heavy-duty ground _____ system

2. Odd man out. In each line choose one word that doesn't belong to the group and explain why you think so:

A) portable ladder – high temperature – turntable platform – storage compartment – supporting jack

B) fire fighter – pump – hose connection – extension ladder – booster line;

C) Aerial Ladder Trucks - Quads – Crash Trucks – Harvesters – Pumpers - Rescue Trucks – Fireboats

3. Match the words in the left column with their explanations in the right column:

A pumper	are quadruple, or four-purpose, trucks. They carry pumps, hose lines, ladders, and as much as 1000 gallons of water.
Crash Trucks	carry extension ladders that can be raised as high as 100 feet by powerful motors on the trucks. Some of them have four wheels, but the largest ones are six-wheel, trailer trucks.
Quads	carries hose, water tanks, and a pump that can shoot up to 1,000 gallons of water a minute through hose lines.
Aerial Ladder Trucks	serve the fire departments of airports. They are specially built to spray water or foam on burning airplanes.

SPEAKING

The article below tells us about some difficulties in fire truck maintenance. Read it and get ready to discuss these problems.

Fire Apparatus Design

Modern fire apparatus has greatly increased in length, width, height and weight. These factors have created some unique problems. Blind spots are created on some vehicles and affect

right-hand turns and backing of the vehicle. Whenever possible, avoid backing apparatus. It is normally safer and quicker to drive around the block. There are situations where it is necessary to back apparatus and, when it is essential, backing should be done with utmost caution. Never back an apparatus without at least one man on foot to clear the way and direct the driver. This practice also applies when backing into a fire station. In some situations two fire-fighters to direct the driver is preferred. Such would be the case when trying to turn an apparatus completely around (180°) under the stress of an emergency on crowded, narrow streets. This type manoeuvre is usually not needed since; once again, driving around the block would be faster and easier. Depending on the design, some aerial equipment will have overhang problems either in front or rear. Be extremely cautious not to ram the aerial tip, elevating platform or bucket into overhead wires, trees or other obstructions.

Work in the groups of four to prepare and act out a role play.
You are to discuss how to improve fire fighting machines. Use four roles given below:

Role 1. A fire-fighter. – You want to have powerful and easy in maintenance fire truck. You are to listen to all your "colleagues" and give your opinion concerning the subject.

Role 2. A designer of the fire truck. – You have some new ideas as for fire truck design. You want to discuss advantages and disadvantages of your future vehicle (a new make of automobile).

Role 3. A shop assistant of a supermarket. – You think that there is no sense to design new fire trucks. Some special - purposed trucks can be converted into 'fire' trucks and equipped with the help of special fire fighting tools and equipment.

Role 4. A manager at the National Fire fighting Apparatus Corporation. – You are sure that fire machinery produced at the plants nowadays need some improvement but should not be equipped at supermarkets.

Work together to devise a new design of a "super" fire truck. Supply the chart and description of your truck.

CHECKING TASKS

1. **Write any of the following compositions using 100-150 words.**

- Fire Fighting Apparatus in Ukraine. Describe the special fire fighting tools and equipment.

UNIT 11

RESCUERS IN ACTION

READING

Pre-reading activity

1. You will see the following words in your new text. Check them in your dictionary and fill in the gaps in the sentences given below.

to ventilate to chop

to use to let out to report to treat

to need to rush to receive

1. Fire fighters _____ a building by____ holes in the roof, if necessary. Ventilation (_____) smoke and gases that (to build up) during a fire that could (to cause) an explosion.
2. Fire department paramedics (_____) persons (_____) emergency medical care and (_____) them to a hospital.
3. The alarm headquarters of a fire department (_____) all alarms (_____) the outbreak of a fire.
4. All three trucks – an elevating platform truck, a pumper, and an aerial ladder truck – (_____) to spray water on a fire.

Read and translate the text. Answer the questions given after the text. Get ready to make a retelling of the text in the name of a seasoned fire-fighter.

Rescuers in Action

The two basic fire-fighting units in most fire departments are engine companies and ladder companies. Engine companies operate trucks called pumpers, which carry a pump and hoses for spraying-water on a fire. Ladder companies use ladder trucks, which carry an extension ladder or elevating platform to rescue people through the windows of buildings. Ladder trucks also have other rescue equipment and fire-fighting tools. In most large cities, each neighbourhood fire station has at least one engine company and one ladder company. At a fire, the members of the engine and ladder companies work together as a team under the direction of an officer.

Fire departments must handle many types of fires. Each type requires a different plan of action to put it out. For example, the methods used to fight a building fire differ greatly from those used to fight a forest or grassland fire. The following SPEAKING describes how fire fighters battle the two types.

After an alarm is received, the engine and ladder companies speed to the fire. They often arrive within a few minutes after receiving the alarm. The officer in command quickly sizes up the situation and directs the fire fighters into action.

The members of the engine company first connect a hose from the pump to a nearby fire hydrant. Then they stretch hose lines from the pump to the building on fire and try to locate the fire within the building. Their first concern is to keep the fire from spreading, The fire fighters spray water on any nearby buildings that are in danger of catching fire. Then they direct water on the fire itself until it is out. Meanwhile, the members of the ladder company search for people who may be trapped in the building. In some buildings, they use ladders to rescue people through windows. However, the ladders on most trucks extend up to only about eight stories. Fire fighters must use elevators or stairs to get to persons trapped on floors above the reach of the ladders. Ladder company members ought also to ventilate the building to let out the smoke, heat, and gases that build up during a fire.

They open or break windows and sometimes cut holes in the roof or walls. If the building were not ventilated, the heat and the pressure of the gases could cause an explosion.

The ladder company tries to save any furniture or other property not damaged by the fire. The members spread canvas or rubber covers over such property to prevent water damage. Finally, the ladder company searches the building for hidden sparks that might cause another blaze.

After the fire is out the fire fighters try to find out exactly where and how the fire started. The officer in charge makes out a report that gives all the important facts about the fire. The report includes information on the number of persons killed, if any; the cause of the fire; and the estimated cost of damage.

Answer the questions:

1. What is the basic fire-fighting unit?
2. What are these basic units equipped with?
3. What rescue equipment and fire-fighting tools do they have?
4. Who works as a team at a fire?
5. What kind of fires must fire department handle?
6. Why do firemen require a plan of action to put a fire out?
7. Who directs the fire fighters into action?
8. What is the first concern of the members of the engine company?
9. What do they do to fulfil it?
10. Who tries to save any furniture or other property not damaged by the fire?

VOCABULARY PRACTICE

1.Match the words in the left column with their explanations in the right column.

fire alarm	is a large vehicle that carries fire men and equipment for putting out fires.
fire-raising	takes place in a particular building, the people who work or live there practice what to do if there is a fire.
a fire engine	is a device that makes a noise, for example with a bell, to warn people when there is a fire.
a firecracker	is a firework that makes several loud bangs when it is lit.
a fire drill	is the act deliberately starting a fire in order to damage or destroy something usually a building.

2.Translate the words in brackets into English. Read about some useful points on fire fighting.

Fire Fighting

(Пожежа) should be extinguished with as little (вода) or extinguishing agent as possible. We must lessen runoff water, which can spread (радіоактивні речовини), rather than for reasons of critical (небезпека). Water runoff can be (контрольований) by dams, dikes or a channel into a retention tank or reservoir. In some cases the runoff can be diluted by flushing with (рукав) streams.

Fire fighting (вентиляція) should be kept to an absolute minimum. Some ventilation may be necessary to (запобігати) explosions or to channel (тепло та дим) out of a (будівля). Under certain conditions, it may be appropriate to shut down the ventilation (системи) to limit (розповсюдження) of contaminants; in other (ситуації), it is best to leave them on.

3. Put the verbs in brackets into the correct form:

1. Modern fire apparatus greatly (to increase) in length, width, height and weight. These factors (to create) some unique problems.

2. Since 1922, the First National Fire Prevention Week, public education programs (to become) important supplements to fire prevention laws and inspection programs. Many such programs operate the year around.

3. Administration in the U.S. space program (to improve) reflective clothing materials for operating in high heat and (to lead) to improved breathing apparatus for working in toxic smoke atmospheres.

4. Fire departments (to make) many significant contributions to improve fire fighting methods through individual efforts to correct pressing problems. Individuals (to lead) the way toward larger hose diameters (up to 6 inches) for moving large quantities of water, the use of portable water storage tanks and improvement of water carrying vehicles for areas lacking readily available water supplies.

4. Fill in the gaps

crisis, cycles, facilitate, inadequacies, objective, occur, recovery, straightforward

We need a_____ , realistic, approach to natural disasters. _____ of drought and floods, earthquakes, hurricanes, and tornados are recurrent events in various parts of the world. We cannot prevent them, or predict the exact times they will_____ , but we can prevent much suffering by preparing beforehand.

Planning, good communication systems, and well-maintained roads and other infrastructure can _____ the delivery of relief supplies and save lives during the_____ . Once the worst effects of the disaster are past, _____ and restoration can begin.

It's also important to take time for an _____ evaluation of the mistakes and successes of the relief effort. Recognizing the _____ of past relief efforts can save lives in the future-- because we know disaster will strike again.

Disaster Planning

diversification, ensure, fundamental, offset, regional

Preparation and good planning at both the _____ and national levels are _____ to disaster relief. For example, local storage facilities can collect food during good crop years to _____ the worst shortages of drought years. Crop _____ can also help _____ adequate food supplies even in uncertain climatic conditions-- some crops will survive even if others fail completely.

aware, compiled, comprehensive, minimum, offset, revenue, symbolic

The past several years there has been unprecedented flood damage in Asia and other parts of the world, with major floods in Southeast Asia and the Philippines, India, and Pakistan, among other areas.1 These nations, _____ that a merely _____ response is no longer adequate, have begun _____ flood water management and dam-building programs. Although these projects are expensive, the _____ from electricity produced can help _____ the costs. The suffering and damage they can prevent are worth the extra expense.

The government planning agencies have _____ statistics and analyzed the data in order to decide how to make the best allocation of their countries' limited resources to reduce flood damage to a _____ in the future.

Disaster Relief

irreversible, items, substitutes, supplement, text, via

After a major earthquake, hurricane, or flood, national and international relief agencies first search for injured or stranded people and rescue as many as they can. New technologies have enabled better communication with the hardest hit areas. (After major flooding in the Philippines, the government informed people of roads that were still passable and areas to avoid _____ Twitter. Cell phones and maybe even _____ messages can help families and rescuers locate missing people and keep in touch.)

Relief agencies deliver food, water, water treatment supplies, and first aid _____ to _____ the affected region's supplies. They try to maintain sanitation and improve the conditions in refugee camps that may be long-term (though inadequate) _____ for home to many displaced people. Such humanitarian relief can prevent illnesses, deaths, and _____ damage to children's brains when local food and other resources are used up.

excessive, input, minimize

However, it is also important to take steps to prevent _____losses from such emergencies in the future. Disaster planning needs to include local participation and the _____ of the people most likely to be affected. If everyone in an area will work together to prepare, they can take steps to _____ some of the damage a drought, flood, or earthquake could cause. Human compassion will remain important, as we need to "expect the unexpected" when dealing with the forces of nature and the weather.

SPEAKING

1. Decide whether the following statements are true or false. If necessary – correct them. Begin with:

- *I'm afraid that's wrong;*
- *as far as I know;*
- *you are not quite right;*
- *on the contrary;*
- *that's not quite so;*
- *I don't think so;*
- *I think you are mistaken;*
- *according to the text.*

1. Fire companies ready to respond to an alarm are said to be "out of service ." When responding to or actively engaged in fire duties they are "in service"

2. Uninformed persons believe that ventilation causes needless damage, but skilled fire fighters know that it saves a building in nearly all cases.

3. The chief officer in command first determines whether any lives are endangered.

4. Rescue is usually undertaken by the personnel of a ladder company and rescue company when the engine companies have stretched hose lines to the scene and hooked up their pumpers to the water supply.

5. What fire fighters call "back draft" can cause explosions in unventilated or improperly ventilated buildings.

2. Make up the standard plan of action on a fire scene. Use the prompts:

- ✓ confine the fire to the area it flames
- ✓ find the precise location of the fire
- ✓ rescue any endangered occupants of the building
- ✓ search out and extinguish all hidden flames
- ✓ declare the fire out
- ✓ attack and extinguish the fires

afraid / scared / frightened

There are differences in use and I shall try to illustrate these. But all these adjectives express roughly the same degree of worry or fear and can therefore be used interchangeably to some extent. **Frightened**suggests more sudden fear:

All small children are afraid of / scared of / frightened of school bullies.

Don't be scared / afraid / frightened. I'm not going to hurt you.

All three can be followed by **of + -ing** clause. **Frightened** cannot always be followed by **of + pronoun** or **noun**:

He's afraid of / scared of / frightened of flying in small planes.

He's a strict teacher. Everyone seems to be afraid of / scared of him.

All three can be followed by the **to + infinitive** pattern:

She seemed too scared to swim where there were such big waves.

After such an experience she's afraid to go anywhere near the sea.

I was too frightened to jump in at the deep end of the pool.

We can be **scared** by or **frightened** by something. We cannot use**afraid** in this way:

She was scared by the hooting of the owl.

They were frightened / terrified by the gunfire and the breaking of glass.

Note that **terrified** expresses a stronger degree of fear.

She's terrified of / by large dogs and won't go near them.

afraid / scared / frightened - position in clause

Note that **afraid** is one of those adjectives that cannot normally be used **before a noun,** but instead is used **after a verb**. **Scared** and**frightened** can be used in both positions:

He seemed afraid. He appeared frightened.

He was, without doubt, a frightened man.

I'm afraid… is also used in another way, meaning: **I regret that I have to tell you that….** It is used to introduce bad news in a gentle or polite way:

I'm afraid there's been an accident at the crossroads. Your son's been knocked over on his bike.

I'm afraid we shan't be able to come on the skiing trip with you. John's got to work.

He's done very little work, I'm afraid. He'll have to repeat the course.

We can use these forms as short answers to confirm bad news:

Will I really have to repeat the course next year? ~ I'm afraid so.

Can't you really come on the skiing trip with us? ~ I'm afraid not.

frightened / frightening

As a general rule, adjectives ending in **-ed** are used to describe how people feel. Adjectives ending in **-ing** describe the things or situations that give rise to these feelings. So, remember, **frightened** describes how **you** feel. **Frightening** describes the **things** that make you feel frightened:

She looked very frightened when I told her she would lose her job.

It was one of the most frightening films I had ever seen.

It's frightening to think that they are capable of producing nuclear weapons.

terrified / terrifying

Similarly, **terrified** describes **you** feel. **Terrifying** describes the**things** that make you feel terrified. Terrified and terrifying express a**higher** degree of anxiety or worry than frightened and frightening:

I was so much in debt. I was terrified I would lose my job when the restructuring was announced.

It was a terrifying experience. I doubt he will ever recover from it.

scared / scary

Scary is the adjective relating to **things** or **situations**; **scared** the adjective relating to **how people feel. Scary** and **frightening**express similar levels of fear or worry:

Being alone in a cave with five thousand bats was scary.

I felt scared when night fell and I was nowhere near human habitation.

CHECKING TASKS

1. Fill in the gaps, using the active vocabulary

In a big-city fire d_____, several fire companies are grouped into districts or battalions. They come under the command of a district chief or battalion chief. In many c_____, several districts or battalions may be commanded by a deputy chief or assistant chief. The fire chief s_____, the entire fire department.

Most f_____ a_____ reach the fire department by telephone calls. Red fire-alarm b_____ stand on street corners in most large cities. When the l_____ of the box is pulled, it sends a s_____ to alarm headquarters, a branch of the fire d_____ . The signal tells the men at h_____ the street corner from which the a_____ came. As soon as an alarm is turned in, the alarm-room dispatcher alerts the nearest f_____ c_____ to go to that location.

The number of t_____ sent out on the first alarm depends on the location of the fire. More units go to a f_____ that e_____ many lives, such as a b_____ in a school, nursing home, or factory, than go to one that does not. If the f_____ is too big for the fire fighters to handle, the o_____ in charge sends in a second or third a_____, or more if necessary. With each a_____, more fire companies rush to the fire.

Some cities have special telephones on street c_____, instead of f_____-a_____ b_____ .When someone lift the telephone, a light appears on the s_____ at alarm headquarters. The person reporting the f_____ can talk directly to the alarm-room o_____.

4. Put the verbs in brackets into the correct form.

Most of the alarms answered by firemen (to involve) fires in early stages that (to train) men using modern equipment . Between alarms, fire fighters (to check), (to test), and (to maintain) their equipment so that it (to be) always in perfect working condition. They also (to study) new fire-fighting techniques and (to practice) skills they have already (to master). When the alarm (to ring), the company (to dash) to battle a great, roaring blaze. For hours, the men (to subject) to intense effort and danger as they (to fight) the flames.

UNIT 12

SAFETY (GENERAL CONCEPTS)

SAFETY AGENCIES

READING

Safety is everyone's responsibility. Individuals, business and industry, government agencies, and private organizations share the obligation to protect people from needless injury and death.

Individuals have many safety responsibilities. For example, you should follow the manufacturer's instructions on all products. Purchase the proper tool or appliance for the work to be done, and never use a device beyond its limitations. Report any unsafe conditions in the community to the proper officials. Provide safety instructions to children. Drive safely.

Business and industry have responsibilities for the safety of customers and employees. They have an obligation to manufacture products that are safe to use, and they must give consumers complete instructions that will prevent accidents. Employers also have the duty to provide safe working conditions and safety education programs for employees, and to hold frequent fire drills. In addition, they must furnish safety equipment and have enough exits for use in an emergency.

Government agencies. Many agencies of the United States government are devoted chiefly to safely. The National Transportation Safety Board works to ensure the safety of all types of transportation. The Federal Aviation Administration creates and enforces air safety regulations. The National Highway Traffic Safely Administration promotes safety in motor vehicles, on highways, and in highway equipment, such as traffic signals. The Consumer Product Safety Commission protects consumers from unsafe household goods. The Occupational Safety and Health Administration works to reduce hazardous job conditions. The U.S. Fire Administration develops new fire prevention and control techniques. The Nuclear Regulatory Commission works to ensure that nuclear power plants operate safely. In addition, most state, county, and city governments have departments concerned chiefly or partly with safety and health.

Private organizations in the field of safety are led by the National Safety Council, a nonprofit organization founded in 1913. The council produces motion pictures, pamphlets, and other educational materials on accident prevention and promotes safety legislation. The American

Association of Automotive Medicine, an organization of physicians and other medical professionals, works to reduce the number of highway injuries and deaths. The Insurance Institute for Highway Safety, supported by the insurance industry, conducts research and educational programs designed to reduce traffic accidents. The American Industrial Hygiene Association strives for accident prevention on the job. The American Society of Safety Engineers is the major professional organization for safety engineers and safety directors in the United States.

FIRE EXTINGUISHERS

READING

Pre-reading activity

1. What is a fire extinguisher?
2. What do you know about different kinds of fire extinguishers? How do we operate them?
3. How are fire extinguishers classified by their contents?
4. Have a look at the words given in the box. Which of these substances can be used as the contents of fire extinguishers?

gas *liquid* *dry powder* *foam* *water* *oil*

Read the text using the list of the new words and check your answers after that.

a film -
the liquid -
dry
to conduct -
a lever -
a hand pump
to shoot -
to deposit -
the multipurpose -
pressure -
combustible –

Fire extinguishers

Fire extinguisher is a metal container filled with water or chemicals used to put out fires. Fire extinguishers are portable and easy to operate and can be used to put out small fires before the flames spread.

There are many kinds of fire extinguishers. The kind used depends on the type of fire involved. Fire prevention experts divide fires into four classes—A, B, C, and D—depending on the burning material. Class *A* fires involve such materials as cloth, paper, rubber, or wood. *Class B* fires involve flammable gases or such flammable liquids as cooking grease, gasoline, or oil. *Class* C fires involve motors, switches, or other electrical equipment through which electric current is flowing. *Class D* fires involve combustible metals, such as magnesium chips or shavings. Most extinguishers are labeled with the class, or classes, of fire for which they can be used. Class D fires require special extinguishers designed for specific metals.

But most other fire extinguishers can be classified, by their contents, as one of four types; (1) water, (2) foam, (3) liquefied gas, and (4) dry chemical.

Water extinguishers are used to fight only class A fires. Water conducts electricity, and so it must never be used on a fire involving electrical equipment. A water extinguisher is operated by a lever or a hand pump that shoots the water through an attached hose.

Foam extinguishers are used for class A and class B fires. They contain water and a foaming agent. One type of foam puts out fires that involve combustible liquids by depositing a film between the liquid and the flame.

Liquefied gas extinguishers may be used on class B and class C fires. There are two main kinds—*carbon dioxide extinguishers,* which contain carbon dioxide gas; and *Halon extinguishers,* which contain a gas called *Halon.* Larger Halon extinguishers can also be used to fight class A fires.

Dry chemical extinguishers are used on class B and class C fires. One type, the *multipurpose dry chemical extinguisher,* also can be used against class A fires. Dry chemical extinguishers contain a chemical powder and a gas under pressure.

1. Here are answers to the questions. What are the questions?

1. _____? - Depending on the burning material

2. _____? - Involve motors, switches, or other electrical equipment through which electric current is flowing.

3. _____? - In about1837.

4. _____? - The gas in liquid form under pressure in the container.

5. _____? - Aluminium sulphate mixed with a sodium bicarbonate water-based solution to generate pressure.

6. _____? - Effective on Class A fires.

7. _____? - Involve flammable and combustible liquids, greases, and similar materials.

8. _____? – A sodium bicarbonate, potassium bicarbonate, or potassium chloride base.

2. Give the answers without consulting the text:

1) How many classes of fires do you know?
2) How do we classify the fires?
3) What is fire extinguisher?
4) Why do we need the fire extinguisher at home and at work?
5) How is the fire extinguisher labelled?
6) What do you know about different kinds of fire extinguishers?

VOCABULARY PRACTICE

1. Read the new words; give the missing translation.

To contain - _____; container - ємність; contents -_____

to fill - заповнювати; filler- _____

to operate - використовувати, експлуатувати; operator- _____

to divide - ділити; division -_____

chemicals - хімічна речовина;chemistry- _____

to put out - гасити, гасити пожежу- _____

portable - переносний, переносний вогнегасник - _____

to spread - розповсюджувати, розповсюджувати полумя - _____

to depend on - залежати від, залежати від типу пожежі- _____

to involve - залучати, залучати різні матеріали- _____

electric current - електричний струм; водяний струм- _____

magnesium chips - дрібні уламки магнію;

дрібні уламки деревини - _____

to label - маркувати; марка - _____

2. Make the sentences from the words

This ; fill; container; water; I; by.

Portable; he; fire; can't operate; extinguisher; his.

The; depends on; fire; type of ; extinguisher; fire.

Involved; paper, fire, wood; and.

4. There are four classes (A,B,C,D)of fire extinguishers. Match the class of fire extinguisher with the class of fire:

- CLASS ___ - energized electrical equipment, such as wiring, fuse boxes, appliances.
- CLASS __ - ordinary combustibles, such as wood, cloth, paper, rubber.
- CLASS ___ - combustible metals, such as magnesium.
- CLASS __ - flammable liquids, such as gasoline, oil, solvents, oil-based paints.

5. Arrange the steps when operating an extinguisher in the correct order.

Aim low; point at the base of the fire

Sweep from side to side keeping the extinguisher aimed at the base of the fire

Pull the pin.

Squeeze the handle.

6. Fill in the gaps in the sentences :

1. To operate most extinguishers, a person _____ the locking pin and _____ the operating lever.
2. Water extinguishers are ____ with water.
3. Foam extinguishers contain water and a _____.
4. _____ extinguishers contain either carbon dioxide gas or a gas called *Halon.*
5. Dry chemical extinguisher contain a _____ .

2. Put the verbs in brackets into the correct form.

In 1825 a fire in Maine and New Brunswick, Canada, (to burn) over 3,000,000 acres of forest land.

One of the worst forest fires in history destroyed the town of Peshtigo, Wisconsin, in 1871. The fire (to start) in the woods after a long period of drought. When a strong wind (to start), it quickly (to carry) the fire through the dry forest. Within four hours the fire completely (to cover) an area 40 miles long and 10 miles wide. This (to include) all of Peshtigo and several smaller villages.

Fire prevention laws with building regulations (to begin) long before modern fire departments (to appear).

Many Roman emperors (to establish) already fire prevention laws in ancient times. About 18 B.C., the Roman Emperor Augustus (to set) maximum heights for houses and

minimum thicknesses for their walls. Later laws (to require) minimum separations between buildings to prevent fires before it (to spread) from one structure to the next.

3. Put the verb <u>to be</u> into the correct form and read the text.

In many cases, water (not to be) an appropriate extinguishment. For instance, where electrical equipment (to be) involved a gaseous agent (to be) the obvious solution.

One such option (to be) Carbon Dioxide economical, colourless, odourless and electrically non-conductive—perfect for the protection of vital services. Like any extinguishing system, a Carbon Dioxide installation (to be) checked and maintained on a regular basis.

4. Fill in the missing preposition and adverbial particles given in the box.

Out by far at along in with on of into over

Fighting Fire

Some fires are harder to put ... than others. Water can put ... wood and paper fires ... lowering the temperature. Water will not put ... an oil fire because oil will rise ... top of water and continue to burn. Sand and dirt may be used ... small oil fires. Water fog, foam, dry chemical, or soda acid extinguishers are also used. Foam or some kind of vapour put ... top of the oil fire will smother it ... keeping ... the oxygen it needs to burn.

Electrical fires may be put ... … carbon dioxide, dry chemical, or vaporizing liquid extinguishers. These are used because they do not conduct electricity. Water is not used because it is a conductor.

Hand fire extinguishers are used only … small fires. ... the United States, extinguishers are examined ... the Underwriters' Laboratories ... Chicago, Illinois. Every extinguisher should have a label that tells the kind and size of fire it will control. Only extinguishers approved ... the Underwriters' Laboratories should be used.

SPEAKING

1. The article below tells us about new trends in portable fire extinguisher design. Look at the picture, read what people say about it and answers of the designer. Get ready to discuss these problems, agree or disagree.

Designer: - For my design studio I am redesigning a fire extinguisher. I did this board for my mid crit and thought it was fun. This project is still in progress: this board was done for a presentation midway through the process. It is one hand use and a pin will be added. I was just trying to work out the overall form of the object. I still have to design a label, work out some details, and make either a physical or compute model.

- I was thinking about when fire extinguishers are used. It seems like mine would be hard to aim under stress. What about rethinking the general form? Maybe change the tank from vertical to horizontal so you could just point the whole unit at the fire like a hose. Just a thought...

- Looks like a kind of wine bottle... In most emergency situations, overstyling becomes a hindrance to efficient use. I suggest that you concentrate on the pure ergonomics and functionality of the design before trying to beautify it. There is a huge platform for a more functional/efficient design for this product. - Could you indicate the size of the thing and how does it indicate its pressure level to the user? - Have you thought through the colour? It does indicate what fire type it is for.

Designer: There are two reasons that the head is pointing down at a 15 degree angle. This way the relatively heavy canister can hang plume while the user puts out a fire 6 feet away from themselves as well as aligning the wrist and forearm when the unit is held below the waist (as most of my users who I filmed using extinguishers did in fact hold it). However my professors have pointed out that the former is only a useful feature if the fire is in-fact on ground level. So perhaps a compromise angle might be best. Thank you for some very helpful criticism.

CHECKING TASKS

1. Decide whether the following statements are true.

If necessary-correct them. Begin with:

I'm afraid that's wrong;	*on the contrary;*
you are not quite right;	*I didn't think so;*
that's not quite so;	*according to the text.*
I think you are mistaken	

as far as I know;

1. The fire alarm box at the street corner doesn't repeat its code before automatically shutting down and restoring the closed circuit.

2. Repair crews for alarm system are very seldom fire department employees.

3. Fire department haven’t replaced a telegraph system with a telephone alarm system.

4. Alarm systems not merely notify the fire fighters where to go.

5. Radio was first used in the fire service in New York City.

6. The first fire radio efforts didn’t run into confusion. An attempt to place all the U. S fire departments on only 35 base and mobile frequencies at the outset was a success.

7. To spread the alarm of fire quickly, fire departments adopted the telegraph when it was invented in the 18^{th} century.

2. Read the text and make up a the report “Ecological and Safety Concerns: Problems and Solutions.” Use the answers for the questions given below.

1. Why are the gas types extinguishers considered the most suitable for fires involving computers?
2. What happens when the operator squeezes a handle of extinguisher?
3. Why was the production of Halon banned?
4. Why is it important to protect the layer of ozone?

Both carbon dioxide and Halon extinguishers have the gas in liquid form under pressure in the container. When the operator squeezes a handle, the liquid flows out of the container and becomes a gas that covers the fire. Liquefied gas extinguishers leave no water or powder. For this reason, the gas types are the most suitable for class C fires involving computers or other delicate electrical equipment that could be damaged by other types of extinguishers. In 1992, more than 85 nations agreed to ban the production of Halon by Jan, 1, 1994, because Halon harms the ozone layer in the earth's upper atmosphere. This layer of ozone protects plants and animals from most of the sun's ultraviolet rays. The agreement, which also allowed for the continued use of stored or recycled Halon, was an amendment to the 1987 Montreal Protocol on Substances That Deplete the Ozone Layer

Reading Checking Tasks

Unit 13

Pre-reading activity.

1. Sort out the words according to the sphere where they can be used:

Public Building Inspections	Home Inspections

to inspect a private home; a theatre; home safety program; a department store; what to do if a fire breaks out; a school; to check the heating and cooking equipment; materials that burn easily; to require portable fire extinguishers; fire exits; to enforce the code; to check the electrical equipment; overloading electrical outlets; to review plans for a new building; a fire safety code; running electrical cords under a rug; to practice fire drills

2. There are three main methods of Fire Prevention and Fire Safety:

(1) laws and regulations, (2) inspection of buildings and other property, and (3) public education about fire safety. Read the title and headings of articles and say what methods are discussed in them: *Arson Investigations. Heat detectors. What to Do in Case of Fire.*

Read the text using the word list given below.

Fire Prevention and Fire Safety

To help prevent fires and reduce fire losses, local fire departments of the USA inspect public buildings and private homes. They also teach people about fire safety and conduct *arson* investigations.

Public Building Inspections. Most cities have a fire safety code that applies to such buildings as theatres, department stores, schools, and hospitals. Under these codes, the buildings may not be constructed of materials that burn easily. The codes also require portable fire extinguishers, a certain number of exits, and other fire safety features in public buildings. Fire department officials inspect public buildings from time to time to enforce the local code. The officials check the condition of the electrical equipment and the heating system. They note the number and location of exits and fire extinguishers. The inspection also covers housekeeping conditions and many other matters that affect fire safety. Fire department inspectors may also review plans for a new building to make sure it meets the safety code.

Home Inspections. Most of the deaths caused by fires occur in private homes. For this reason, many fire departments have home safety programs. In the USA a fire department will send a fire fighter to inspect a private home if asked by the owner. After the inspection, the fire fighter recommends ways to make the home safer from fire. During home inspections, fire fighters check the heating and air-conditioning systems and the cooking equipment. They look for unsafe

practices, such as overloading electrical outlets or running electrical cords under a rug. The fire fighters also instruct families on what to do if a fire breaks out. To leave the home safely and quickly in case of fire, families are advised to make escape plans and to practice fire drills.

Most fire departments advise to install *smoke detectors* in their homes and offices. Smoke detectors are devices that sound an alarm if smoke builds up in a room. The devices are attached to the ceiling or wall in several areas of the home. Most home fires that result in deaths occur at night when the family is asleep. Smoke detectors will awaken the family before the fire and the smoke build up to the point where escape is impossible. *Heat detectors,* which sound an alarm if the temperature rises to a certain point, are also available. However, smoke detectors generally give an earlier warning than do most heat detectors. Fire departments also recommend that people have portable fire extinguishers in their homes and offices. A person must be sure, however, to use the right kind of extinguisher for the type of fire involved. For example, a water extinguisher cannot put out a grease fire. Such a fire can be fought with a special gas extinguisher.

Public Education Programs. Many fire departments work with other local agencies to teach people how to prevent fires and what procedures to follow during a fire. In some communities, fire department officials serve as instructors or advisers in fire safety courses in the schools. They also supervise school fire drills.

Arson Investigations. Arson is the crime of purposely setting fire to a building or other property. Many fire departments have a squad of specially trained investigators who gather evidence in cases where arson is suspected. Fire department officials in some cities estimate that nearly half the fires in their cities are purposely set.

1. What do you have to do to reduce or eliminate the risk of financial loss through fire?
2. What do you know about a fire safety code?
3. Why do the fire department officials inspect public buildings from time to time?
4. What do fire fighters do during home inspections?
5. What must you do in case of fire?
6. What do most fire departments advise people to install?
7. Why do many fire departments have a squad of specially trained investigators?
8. What do you think about Public Education Programs?

Unit 4

Pre-reading activity.

Guess whether these statements are true or false then read the text and see if your guesses were correct.

a) All substances do not burn in the same manner.

b) Visible smoke always accompanies fire.

c) Heat presents a physical danger to man because of hot gases and radiation.

Kinds of Fire

Fire is the heat and light that comes from burning substances. In 1774, Antoine Lavoisier, a French chemist, proved that burning is the result of the rapid union of oxygen with other substances. As a substance burns, heat and light are produced. Burning is also called combustion. Often oxygen unites with other substances at such a slow rate that little heat and no light are given off. When this happens we call this process *oxidation,* rather than *burning* or *combustion.* Oxidation takes place whenever oxygen unites with other substances either rapidly or slowly. For example, when oxygen unites with gasoline, the action takes place rapidly and heat and light are given off. This process may be described by any of the three words, **burning, combustion**, or **oxidation**. When oxygen unites with iron and causes it to rust, burning, or combustion, does not take place, but oxidation does.

All substances do not burn in the same manner. Substances such as wood, oil, magnesium, gas, and coal give off heat and a flame, while a substance like charcoal gives off heat with only a glow. But all these substances require oxygen, which may be obtained from the air, in order for them to burn.

Sometimes old rags soaked with oil or paint are put aside and forgotten. Oxygen from the air may slowly unite with the oil in the rags. At first, there will not be a fire. But as oxidation gradually takes place, enough heat accumulates to set the rags on fire. This type of burning, called spontaneous combustion causes many fires.

Very rapid burning may cause explosions like those produced by gunpowder and dynamite. Here, oxidation takes place so rapidly that great volumes of gases are produced. These require many hundreds of times the space that was formerly occupied by the gunpowder or dynamite before it was oxidized. These gases expand so rapidly and violently that they produce an explosion. An explosion is really a sudden increase in volume, caused by rapid burning.

Answer the questions:

1. What do we call “oxidation”?
2. Why does fire present threat to life and property?
3. What is spontaneous combustion?
4. What can cause an explosion?
5. What produces flame and heat?
6. How did the first man use a flame?

7. What combustion products can be named “evidence of fire”?
8. Why does heat present physical danger to a human being?

Unit 2

How civil defence is administered

In the United States, the Federal Emergency Management Agency coordinates the nation's nonmilitary preparations for an enemy attack. The agency also has the chief responsibility for the federal programs that follow peacetime disasters. FEMA works with industries, national organizations, and state and local government to improve civil defence preparedness.

FEMA administers a nationwide system of public shelters and thousands of emergency operating centers. The centers are protected places where top officials can meet to direct operations in an emergency situation.

In a major peacetime disaster, such as an especially destructive flood or storm, the President may declare a region to be a disaster area. Such a declaration makes the area eligible to receive funds and other assistance from the federal government to help deal with the disaster. FEMA coordinates this relief program.

Every state has a civil defence director and provides assistance to the civil defense agencies of its cities and counties. Most cities and counties also have a civil defense director. This official coordinates emergency preparations made by the local government and by individuals and private organizations.

In Canada, a federal agency called the National Emergency Planning Establishment, also known as Emergency Planning Canada, administers civil defence. It coordinates emergency planning by a federal agencies and departments. It also helps the cities, provinces, and territories plan for major emergencies.

In other countries Civil defence programs are conducted by the governments of many other countries, including Denmark, Norway, Russia, Sweden, Switzerland and the United Kingdom. For example, the United Kingdom Warning and Monitoring Organization are set up to warn the public of an enemy attack and measure the level of nuclear fallout.

UNIT 1

OUR UNIVERSITY

READING

I. Read the text. Get ready to retell it.

Our University

Now I am a cadet of Civil Defence University of Ukraine. My future profession is a specialist in the field of fire safety and civil defence. I like my future profession. This profession is very

difficult but important for our society. The aim of civil defence in every country is to protect peoples' life and property in an emergency, such as fire, natural disaster, and industrial accident.

The goals of Emergency Service are not only to respond to an emergency, for example to put the fire out, but to prevent it. New civil defence educational establishments have appeared in the country for the last 10 years. One of them is Civil Defence University of Ukraine.

The history of our University began on July 17th, 1928 when the All-Ukrainian Fire Technical Courses with six months' period of training were opened by the Decree of the Council of People's Commissars of Ukraine. In 1935 the Courses were reorganized into Kharkiv Fire Training Secondary School. The period of training was only one year. In 1946 the Secondary School was reorganized into Fire Technical School with three years' period of training. In 1992 Fire Technical School transformed into Kharkiv Fire Safety Institute. The period of training was five years. In 2002 Kharkiv Fire Safety Institute was reorganized into Fire Safety Academy of Ukraine. In 2006 the Cabinet on Ministers granted to the Academy the status of a university.

During these years the educational establishment had different names. And the high standards of teaching and training specialists for rescue units never change.

Nowadays it is a modern educational establishment with the considerable teaching, scientific staff, modern research and training facilities. Highly-qualified academic staff teaches the future specialists for fire and rescue service.

Our University fulfils teaching for a number of specializations at the 5 faculties within the specialties Fire Safety, Civil Defence, Psychology. Teaching is accomplished according to the state educational qualification standards – Bachelor, Specialist, and Master.

Unit 6

Fire Service in Ukraine

Departments of Fire Safety in Ukraine are governed by the Ministry of Emergencies and Affairs of Population Protection from Chernobyl Catastrophe Consequences. The departments coordinate fire prevention and rescue operations. The main tasks of firemen can be determined by the following motto "to prevent, to save and to help". According to Ukraine Constitution fire brigades of Ukraine extinguish fires, localize and control them free of charge. The Fire Service of Ukraine is a state institution. Recently the new foundations have been adapted to the Fire Service: a firefighter becomes a rescuer. Fire brigades take part in liquidation of consequences of emergencies. When we speak about emergencies we often mean disasters: earthquake, flood, hurricane, rain and snowstorm, draught. These disasters are caused by forces of nature. During an earthquake the buildings move and can be destroyed. There are many cracks in the ground. During a rain or snow storm it rains and snows heavily, the wind blows; you can see lightening and can hear thunder. The consequences of a rain storm or melting of snow can be a flood. To localize, to control rescue activities a fire rescuer must know and understand the origin of the disaster.

1. be determined by the following motto… - визначатися таким девізом…
2. new foundations have been adopted… - відбулося реформування…
3. we often mean… - ми часто маємо на увазі

Unit 6

Earthquake

On October 17,1989, millions of Americans turned on their TVs to watch the U.S. baseball championship. Just as the game was about to start (18:25), TV screens went blank. San Francisco had been hit by an earthquake.

Although destructive, this earthquake was insignificant compared to the great quake of 1906.

The 1906 quake struck at 5:00 a.m., jolting people from their beds. Buildings danced and tumbled, entire streets moved like ocean waves. Fires followed the quakes. Since San Francisco had lost its water supply, little could be done. Finally after 4 days, the rains came and winds changed. ¾ of San Francisco had burned down – 28,000 buildings were burned at a loss of $350 million in San Francisco

Unit 5

Pre-reading activity

1. You are going to read an article about the history of fire-fighting organizations. Look at the names of cities and say what you know about fire fighting practice in these cities at different time.

Rome; London; New York City

2. Use your dictionary to check the following words. Try to predict the order of their appearance in the text:

insurance company governor bucket warden

volunteer steam pumper chimney rattles watch alarm

Read the text and translate it. Make a close-to-the text retelling of the contents.

History

One of the first fire-fighting organizations was established in ancient Rome. Augustus, who became emperor in 27 B.C., formed a group called the *vigil.* The vigils patrolled the streets to watch for fires. They also served as the police force in Rome.

Scholars know little else about the development of fire-fighting organizations in Europe until after the Great Fire of London in 1666. This fire destroyed much of the city and left thousands of people homeless. Before the fire, London had no organized fire protection system. After the fire, insurance companies in the city formed private *fire brigades to* protect their clients' property.

The development of U.S. fire protection. The early American colonists fought building fires by forming *bucket brigades.* One row of volunteers passed buckets from a source of water to the fire. Another row passed back the empty buckets. The fire fighters also pulled down buildings next to the burning structure with iron hooks attached to ropes. In this way they created a separation between the buildings to help prevent the fire from spreading.

Peter Stuyvesant, the governor of a colony that included what is now New York, made one of the first efforts to establish a fire prevention system. In 1648, he appointed four fire wardens to inspect homes in New Amsterdam, which later became New York City. The wardens' chief duty was to inspect chimneys for fire hazards. In 1658, Stuyvesant began one of the first community alarm systems. He appointed a number of men to patrol the streets at night and watch for fires. The men were called the *rattle watch* because they shook wooden rattles to alert the townspeople whenever a fire was discovered.

In 1679, Boston established the first paid fire department In the American Colonies It consisted of a crew of men who operated a hand pump. In 1736, Benjamin Franklin founded the colonies' first volunteer fire department in Philadelphia.

By the early 1800's, many U.S. cities had volunteer fire departments. The departments required numerous volunteers to pull and operate the hand pumps and hose wagons. In many cities, the most prominent citizens belonged to the volunteer departments, which became powerful social and political organizations.

In the mid-1800's, steam pumpers pulled by horses began to replace hand pumps. The steam pumpers required fewer persons to operate them. About this time, many of the larger cities changed from volunteer to paid fire departments. During the early 1900's, steam pumpers were replaced by gasoline fire engines. Since then, many improvements have been made in the equipment and methods used in fire fighting.

Recent developments. During the 1970's, the U.S. government encouraged fire departments to devote more time and money to fire prevention activities. In 1974, the government established the National Fire Prevention and Control Administration, which became the United States Fire Administration (USFA) in 1978.

The USFA serves as an information centre for fire departments in the United States. It also develops new fire prevention and control techniques for use by local departments. It also operates the National Academy for Fire Prevention and Control in Washington. D.C. The academy develops training programs for fire fighters and others who work in the field of fire prevention and control.

False alarms have also become a serious problem. In some United States cities, a third or more of all alarms received by the fire department are false alarms. Some fire departments have

removed alarm boxes from areas with a long record of false alarms. Other departments send fewer companies to answer alarms during peak false alarm periods.

A number of paid fire departments began to hire women as fire fighters in the 1970's. Women had served in volunteer fire departments since the 1600's but were not admitted into any paid departments until the 1970's.

Answer the questions:

1. What do we know about the development of fire-fighting in old Europe?
2. How did the early American colonists fight fires?
3. Who made efforts to establish a fire prevention system in the Colonies?
4. What influenced the development of fire departments in the mid-1800?
5. How were fire prevention activities encouraged in the USA?
6. What are the functions of the USFA?
7. What has recently become a serious problem in some U.S. cities?
8. What do you know about the women admitted into fire departments?

Unit 8

The fallout hazard. Fallout can be dangerous to plants, animals, and people because of the radioactive elements it contains. These elements include about 200 isotopes of more than 30 chemical elements produced by a nuclear explosion.

The radioisotopes in fallout give off radiation for varying periods of time. Most fallout radioactivity dies off in a matter of hours or days. As a result, the radioactivity at the end of two weeks is only one-thousandth as strong as the radioactivity one hour after the nuclear explosion. But even at the end of two weeks, local fallout can be so intense that it remains a serious hazard. A few of the fallout elements continue to give off radiation over a long period. For example, the radioisotope strontium 90 loses half its radioactive strength every 28 years, and the radioisotope cesium 137 loses half its strength every 30 years. The possibility of nuclear war has caused people to think about the danger of local fallout. This type of fallout involves a twofold problem. First, there is the danger of radiation that is emitted by the radioactive debris on the ground. People can best protect themselves from this radiation by taking refuge in underground fallout shelters. For example, 3 feet (91 centimeters) of earth overhead will reduce the radiation's intensity to one-thousandth of its original intensity.

Second, there is the danger that certain fallout elements may enter the human body through breathing and eating. For example, milk is a route by which the radioisotopes iodine 131 and strontium 90 enter the body. First, fallout descends on grass. Next, cows eat the grass. Some of the radioisotopes are then transferred to the cows' milk. Anyone who drinks the contaminated

milk takes in iodine 131, which collects in the thyroid, and strontium 90, which is absorbed by the bones.

Foods are contaminated by the direct deposit of fallout on plants and by the slow uptake of radioisotopes in soil by the plants' roots. The behavior of radioisotopes in the environment depends partly on the chemical properties of the element. For example, bones in the body can absorb strontium-90 because strontium and calcium have certain similar chemical properties.

History. From the mid-1940's to the early 1960/s, the United States, the Soviet Union, and a few other nations exploded many experimental nuclear weapons. As a result, distant fallout increased to alarming levels. In 1963, more than 100 nations, including the United States and the Soviet Union, signed a treaty that banned the testing of nuclear weapons everywhere but underground. Fallout then decreased greatly. China and France did not sign the treaty. They later stopped testing nuclear weapons aboveground.

Fallout shelter is a building or an underground area that protects people from nuclear fallout. A nuclear explosion scatters bits of radioactive material into the air. Within a few hours, the fallout particles settle over hundreds of square miles or square kilometers. Fallout gives off radiation that can cause burns, illness, or even death.

People can protect themselves from fallout by taking shelter in a building made of such heavy materials as brick, concrete, or stone. Any such building blocks most of the radiation and can serve as a fallout shelter. Underground areas, including mines and tunnels, also provide protection from fallout.

The United States government has designated many buildings and underground areas as public fallout shelters. Many public shelters have been set up in the basements of apartment and office buildings, factories, schools, and other large structures, or in windowless central areas aboveground. Other public fallout shelters are in subway-train tunnels or other underground areas. In the United States, public fallout shelters are marked by a black-and-yellow sign.

The U.S. public fallout shelter program began in 1961. This program is now the responsibility of the Federal Emergency Management Agency (FEMA), an independent agency established in 1979. Public fallout shelters have also been established by the governments of many other countries, including Denmark, Finland, Sweden, and Switzerland.

A family may build its own fallout shelter in a basement or outside the home. Underground shelters provide the most protection from radiation. Plans for home fallout shelters may be obtained from the Federal Emergency Management Agency, Washington, DC 20472.

UNIT 7

Flooding occurs in known floodplains when prolonged rainfall over several days, intense rainfall over a short period of time, or an ice or debris jam causes a river or stream to overflow and flood the surrounding area.

Melting snow can combine with rain in the winter and early spring; severe thunderstorms can bring heavy rain in the spring and summer; or tropical cyclones can bring intense rainfall to the coastal and inland states in the summer and fall. Flash floods occur within six hours of a rain event, or after a dam or levee failure, or following a sudden release of water held by an ice or debris jam, and flash floods can catch people unprepared. You will not always have a warning that these deadly, sudden floods are coming. So if you live in areas prone to flash floods, plan now to protect your family and property. As land is converted from fields or woodlands to roads and parking lots, it loses its ability to absorb rainfall. Urbanization increases runoff two to six times over what would occur on natural terrain. During periods of urban flooding, streets can become swift moving rivers, while basements and viaducts can become death traps as they fill with water. Several factors contribute to flooding. Two key elements are rainfall intensity and duration. Intensity is the rate of rainfall, and duration is how long the rain lasts. Topography, soil conditions, and ground cover also play important roles. Most flash flooding is caused by slow-moving thunderstorms, thunderstorms repeatedly moving over the same area, or heavy rains from hurricanes and tropical storms. Floods, on the other hand, can be slow- or fast-rising, but generally develop over a period of hours or days.

There are no other storms like hurricanes on Earth. Views of hurricanes from satellites located thousands of miles above the Earth show how these powerful, tightly coiled weather systems are unique. Each year, on average, 10 tropical storms (of which six become hurricanes) develop over the Atlantic Ocean, Caribbean Sea, or Gulf of Mexico. Many of these storms remain over the ocean.

Hurricanes and tropical storms are cyclones with tropical origins (tropical cyclones). When the winds of a tropical storm (winds 39 to 73 miles per hour) reach a constant speed of 74 miles per hour or more, it is called a hurricane. Hurricane winds blow in a large spiral around a relatively calm center known as the “eye.” The “eye” is generally 20 to 30 miles wide, and the storm may have a diameter of 400 miles across. As a hurricane approaches, the skies will begin to darken and winds will grow in strength. A hurricane can bring torrential rains, high winds, and storm surge as it nears land. A single hurricane can last more than two weeks over open waters and can run a path across the entire length of the eastern seaboard. More dangerous than the high winds of a hurricane is the storm surge — a dome of ocean water that can be 20 feet high at its peak and 50 to 100 miles wide. The surge can devastate coastal communities as it sweeps ashore. In recent years, the fatalities associated with storm surge have been greatly reduced as a result of better warning and preparedness within coastal communities.

Most deaths due to tropical cyclones are flood-related. Inland flooding is a common occurrence with hurricanes and tropical storms. Torrential rains from decaying hurricanes and tropical storms can produce extensive urban and river flooding. Winds from these storms located offshore can drive ocean water up the mouth of rivers, compounding the severity of inland flooding. Inland streams and rivers can flood and trigger landslides. Mudslides can occur in mountainous regions. In addition, hurricanes can spawn tornadoes, which add to the destructiveness of the storm.

UNIT 12

FIRE FIGHTING EQUIPMENT & TOOLS

Firefighters use a variety of equipment and tools to perform their job. From the heavy-duty trucks and pumpers to small hand tools, there are a number of necessary things that assist the firefighter. Every fire department has many of these tools in common, and some that are specialty agencies have very specific tools for the types of fires they face.

Trucks and Pumps

- Aerial ladders, trucks with pumps, or rescue engines are all called apparatus in the fire department. These transports firefighters, gear, water, ladders and everything else they need to do their job. Engine companies often have more than one type of truck, some transport mainly gear and firefighters while others concentrate on hoses and large tanks full of water when availability on-site is limited. Aerial ladders are common in large cities where multiple story buildings exist.

Hand Tools

- The axe is the universal symbol that is often seen in fire department logos, and an ever-present tool. Pike poles, Halligan bars, fire extinguishers, ventilation fans, floodlights and flashlights are all commonly used tools.

Specific Equipment

- Airplanes and helicopters are identifiable as very specific firefighting equipment for forest and brush fires. Common in dry western states where fires of this type are common these drop large loads of chemical fire retardant or water and are designed for multiple flights.

Personal Protection Equipment

- Firefighters must be able to operate in the worst conditions to protect the life and property of others, and this means their safety is the first concern. Necessary equipment every firefighter must have is his turnout gear, or the suit that protects him from the fire, and an SCBA, or Self Contained Breathing Apparatus, that is breathing

unit that protects him from smoke. Helmets keep the head protected, and the SCBA mask assists breathing and protects the face. A Nomex hood protects the skin of the neck and head from burns, and the turnout gear or bunker suit can take extreme temperatures and protects the firefighter from heat and flame while inside the burning structures. The firefighter also wears a PASS device, or Personal Alert Safety System, that is activated if a firefighter is motionless for a given period of time which could mean they have been injured. Those devices help locate a firefighter if he is in trouble an in need of rescue.

Fire Detection

- A thermal imaging camera is carried by many fire departments and can detect fire not seen by the naked eye. Detecting heat within walls and areas that can't be accessed, this piece of gear is brought in to find any hidden or remaining hot spots or fire within walls that a firefighter is not able to see or find without the help of this technology.

Words Every Resume Should Include

By Caroline Levchuck

Every word on your resume counts in today's competitive job market. But some words count more than others -- especially those that refer to soft skills.

Soft skills are increasingly important in the workplace. In fact, 86 percent of employers considered soft skills to be among their most important hiring criteria in a recent survey by two University of Massachusetts economists.

'Teamwork'

Teamwork is more important than ever in the workplace. The ability to work well with others to accomplish a common goal is vital for a harmonious workplace. Employees are often organized into teams to manage projects. And many employers believe collaboration increases the quality of work and improves productivity. A team player is an attentive listener, a cooperative colleague and is willing to help others.

'Flexibility'

Employers value workers who are flexible and able to juggle multiple tasks simultaneously. In other words, it's sometimes just as important to be a jack-of-all-trades as a master of one. You can show that you're flexible by demonstrating a willingness to take on new and varied projects and an ability to handle changing priorities and deadlines. Ultimately, being flexible doesn't only increase the odds that you'll get a job -- it also improves your chances of keeping it should layoffs occur.

'Detail-Oriented'

Employers want to know that they can trust workers to handle a project down to the last detail. Being "detail-oriented" means being organized and meticulous about your work. It also implies that you can work without constant supervision and act independently.

'Self-Motivated'

Employers value employees who are self-starters. These workers can generate their own ideas and follow them through to fruition. A self-motivated worker goes the extra mile. She regularly takes on tasks that may not be part of her job description. She's inspired to work hard not just to reap rewards but also for personal satisfaction.

Words to Avoid in Your Resume

By Christopher Jones

Most resume-writing guides focus on "power words" -- words that promise to grab the attention of recruiters as they scan hundreds of resumes -- but few tell you what words to avoid in your resume.

Below is a list of words and word types that your resume would be better without.

Abbreviations and Acronyms

AFPCA, CHIGFET, FIPL, MRSRM, ZWE: Looks like a fresh game of Scrabble, doesn't it?

Too many abbreviations and acronyms in a resume make it unreadable.

As a rule, avoid using abbreviations and acronyms unless they are commonly recognized. If you work in an acronym-heavy industry, such as technology, use acronyms sparingly.

Personal Pronouns

It seems odd to avoid personal pronouns (I, me, my) in your resume -- a document that is all about you.But, it actually does make sense. Since your resume is all about you, the addition of "I" or "me" is redundant. Since a resume should contain no unnecessary words, there is no place for the personal pronoun. Your resume, after all, is not a memoir but a concise summary of your skills and experience.

Negative Words

These words spell death for a resume. Words like "arrested," "boring," "fired," "hate" and "sexist" catch a recruiter's eye like to a two-ton magnet catches a paper clip. If there are difficult issues you want to raise, save them for the interview.

Keep These Words to a Minimum

There are other words that are sometimes necessary in a resume, but that should nevertheless be kept to a minimum.

Among these:

- Abused words: a, also, an, because, the, very
- Any word you can't define: You may think using these words make you sound smart, but if you use them incorrectly they could kill your chances of landing the job.
- Words that can be embarrassing if spelled wrong: assess, skills

UNIT13

Others Who Work for Safety

In order to improve conditions and *to cut down* on accidents, state and city governments have safety departments. Engineers plan highways, intersections, traffic lights, and regulations to lessen the possibility of accidents. Traffic patrols operate constantly *to cut down* speeding, enforce laws, and assist motorists. Education of automobile drivers is *carried on* constantly, and drivers' licenses are issued only after the motorist shows that he knows the rules of traffic as well as how *to operate a vehicle*.

City fire departments try to prevent fires *as well as* put them *out*. Periodic inspection of all business buildings is a regular part of their duty. Special officers inspect electrical wiring

installations and *okay* them only when they *conform* to city or state fire laws. This inspection is *carried on* in connection with home building also, and firemen *will inspect* any home *for* fire hazards whenever requested.

Industries which *employ men in* dangerous occupations are required to *abide* by state safety laws. They are inspected regularly for possible violations and for new conditions of danger which might arise. Because they are responsible for *damage through injury* to their workers, it is to the advantage of employers to make their shops and factories as safe as possible. They spend time and money trying to educate workers to be efficient and careful.

The safety of equipment such as electrical devices and products such as food and drugs can be tested in laboratories *set up* for the purpose. These products can then carry a seal or label which states that they have been tested and *have passed a safety inspection*. This service protects buyers from harmful products.

Colleges and universities serve the people through their laboratories and engineering departments. They devise new ways to improve products and methods, and inform people of the safest ways of doing things in everyday life. Persons may *enroll in* safety courses connected with agriculture, industry, or homemaking and learn how to teach safety more effectively.

In many communities the citizens organize to make their cities and villages more safe. They discuss traffic needs, bicycle and pedestrian safety, and other safety problems. These persons usually represent the city government, police, fire department, schools, recreational agencies, and any other groups *interested* in improving safety. They may include high school students and even younger boys and girls.

There are several national voluntary organizations which *are noted for* their interest in safety. The American Red Cross *co-operates with* numerous groups. One very important contribution it makes is in offering first-aid classes. Another is in teaching water lifesaving courses. National farm and youth organizations *are* also *active in teaching* safety to their members. The Boy and Girl Scouts and Camp Fire Girls teach safety *in connection with* all their activities. The largest organization of all is the National Safety Council, a voluntary organization which has member representatives from practically any group *interested in* safety. Each year it *holds a convention* called the annual congress, attended by about 12,000 persons.

So it can be seen that a very large number of persons *are working for* safety. Each citizen and each boy and girl might well ask what he, himself, *is doing for* safety

READING BANK

When disaster strikes

A TEMPORARY TEAM WAS put together for the SRSAs first international operation following the earthquake in Armenia in 1988. Solutions to problems were improvised along the way.

"'We came to the SRSA College in Rosersberg early in the morning, and we had to choose from the equipment that was available - blue clothes and orange overalls," remembers Gunnar Frycklund, who joined the earthquake operation as a dog handler.

The team had to figure out everything el e for themselves on site - building a camp, finding wood for heating, finding water, cooking facilities and toilets. They managed it, largely thanks to the fact that some of the team members had a military background and were able to take charge and set up a functioning base camp. For the first week, communication with Sweden was not possible. The operation went well, despite the fact that much of the team's energy went to sorting out their own living conditions, and those of the rescue dogs.

The lessons learned on the first operation have made their mark. Although each situation demands some unique solutions, the basic needs of operational personnel are more or less the same regardless of the operation - shelter, food, clean water, sanitation, basic medical care and communication with their home country. Today, construction of base camps and related functions such as water purification and IT form an important part of what the SRSA has to offer in disaster situations.

Poor international coordination

At the end of the 1980:s, international coordination of disaster aid was poor. In 1991, the DHA (Department for Humanitarian Affairs) was established, now called the UNOCHA (Office for Coordination of Humanitarian Affairs). This is the UN body charged with strengthening and streamlining the work of the UN in connection with international disasters.

In the absence of structures, guidelines and specific modules, each country's operational had to proceed by trial and error, building up new structures from scratch.

During this period, the global political situation was in flux. Relations between East and West were thawing, and the Berlin Wall fell in 1989. International relief efforts in the aftermath of natural disasters became a way of bridging political, ethnic and religious divides. The Swedish government recognized that Sweden could play a significant part and saw the potential of the SRSA in this context.

However, with the exception of one necessary mission caused by the grounding of the Exxon Valdes oil tanker off the Alaskan coast in 1989, when the SRSA sent oil purification equipment and instructors, it was to be a few years before the next international mission.

First operation for refugees

Conflict broke out in several parts of the world in the early 1990:S. What was Yugoslavia collapsed and a series of wars began. Somalia was engulfed in civil war after the fall of dictator Siad Barre.

In the aftermath of the Kuwait crisis, Kurdish refugees had been driven over the borders to Turkey and Iran. The global media focused on the unfolding events, and the UN's refugee organization, the UNHCR, was on hand to receive the refugees on arrival. The need for international aid was great.

«I got a phone call one Saturday from the Director General of the SRSA at the time, Lennart Myhlback. He told me that the government had tasked us with sending aid to the refugee camps in Turkey and Iran. Within 24 hours of that call, we were on our way,» says Lars Bjergestam, who later became the Head of the SRSA's International Department until 1999.

After the operation in Armenia, the SRSA had contracts with the emergency services in the largest Swedish munici-palities, which made it possible to mobilize personnel fast.

«It was a real strength to have personnel from the emergency services who were used to working independently. Without them, the operation wouldn't have been possible. In those days there was no register of available personnel - we just had to rely on the recommendation of the fire chiefs," reminisces Lars Bjergestam.

Between the phone call to Lars Bjergestam and the group's departure, the SRSA had to get hold of equipment, tents, supplies, transportation and personnel. One of the most high priority tasks once they got
there was to be setting up a water supply system for the refugees.

"It was difficult to get hold of maps and descriptions of the area, the kind of thing that you can easily find on the internet these days. After much discussion we managed to get a map from the USA. Certain areas had been cut out, but we could still see where water sources could be found in the mountains and trace possible routes.

Two teams were sent from Sweden. One group flew direct to Diyarbakir in Turkey to find out what supplies and equipment they could find locally. The other group drove the truck convoy down to Turkey .

"It took a week for them to get there, and the journey was fraught with problems. We learned from that experience that it's better to transport trucks to the area by plane, which is what we now do."

Learning from mistakes

Sweden was the first country to have a complete team assembled in the Diyarbakir area to assist the UN personnel. Aid gradually arrived from other directions. The airfield in Diyarbakir was strewn with tents and supplies. There was no local structure for receiving and distributing everything.

«We realized that our philosophy of taking the supplies all the way there was right," says Lars Bjergestam.

The aid to Kurdish refugees in Turkey and Iran was successful in many ways. The team managed to solve the water supply problem by setting up a system of small pipes from the mountain sources down to the refugee camps, where water collection points were set up.

«We hadn't even thought about water purification at point. In that case it wasn't needed, since we took the water from pure sources in the mountains. We almost made a couple of other mistakes, like the time we ordered a shipment of baby bottles as we had been told that they were needed. When we found out that baby bottles were an unknown concept there, and that it wouldn't have been possible to clean them properly, we stopped the order. It could have done more harm than good."

«Another time we were on the point of sending a shipment of corn. Then we found out that corn was seen as pig fodder, and we managed to change the order to wheat flour at the last minute."

One solution that was a success from start to finish was the decision to take 'iron horses' with us - small vehicles on crawler tracks with throttle handles, designed for transportation of small timber. These were perfect for transporting equipment across uneven terrain in the construction of the water supply system.

Experience laid the foundations

In the early 1990s, around 140,000 refugees crossed over from Somalia and Ethiopia into north-western Kenya. The SRSA was asked to construct two camps for UN personnel. The conditions in Africa - not least the climate - constituted a new experience for the Swedish team.

"We took our classic Swedish tents for the personnel to sleep in. But we soon realised that the temperature inside the tents in those conditions reached about 100o C," explains lord Schyberg, who was there, Special tents were flown in from Nairobi instead.

«During the first few operations, we had to reinvent the wheel every time. But that experience laid the foundations for how to set up a functioning camp, with food, water sanitation, accommodation, offices, communication and safety. Today we have modules for longer-term accommodation that include tent modules and freight containers, » he continues.

Major safety risks in Bosnia

As civil war was spreading in Bosnia, the SRSA was tasked with organizing transportation of supplies and refugees in the area. The operation ended up lasting two years, from June 1992 to June 1994, and after a time the SRSA was also asked to organize the UNHCR's radio communication for aid shipments in eastern Bosnia and to carry out repairs for the truck convoys in the area.

It became the SRSA's longest operation in its history, involving around 340 people, divided

into ten teams.

In Bosnia, the safety of the operational personnel was often under threat. At the beginning of the operation, aid shipments were to include the war zone of Sarajevo. The convoys were exposed to constant gunfire and after one week, shipments to Sarajevo were judged to be too risky. One convoy carrying supplies had had to take cover from grenade fire.

Difficult situations also arose in connection with the transportation of refugees. Several convoys were exposed to gunfire or stone throwing, and on one occasion a convoy got stuck in Tuzla, waiting for an exchange of prisoners between Serb and Muslim forces.

Modules for refugee situations

After several years of conflict in Rwanda, a peace agreement was signed in 1993 and UN troops were sent to keep the peace. However, tensions continued to rise, and on 6 April 1994, a genocide began that was to take on enormous proportions. Two million Rwandans fled over the borders to neighbouring countries.

In 1993 and 1994, the SRSA sent several support teams to Rwanda and the neighbouring countries where refugees were present. Their tasks varied from constructing refugee camps and organising water distribution to building field offices for UN staff and setting up satellite communication and communications centre’s. In 1993, the SRSA also constructed a base camp for international aid workers in connection with the refugee crisis in Liberia. Other refugee-related operations were carried out in the following years.

As early as July 1994, when over 1.2 million Rwandan refugees fled to what was then Zaire in the space of four days, the UN recognized a need for specific modules for major refugee situations. Over the following years, the SRSA participated in the work of developing specifications for these modules, which cover six areas - air transportation, logistics, refugee camps, water distribution, sanitation and medical care.

«Within the SRSA, we began to discuss how we could adapt our structure to make it possible to organize package solutions for major refugee situations , for example, how to set up water distribution for IOO,OOO refugees. We thought about what that would require in terms of personnel, equipment, and structure, » explains Lars Johansson, now head of a section at the SRSA's International Department.

«We also began to investigate how we could cooperate with other organizations, for example in the UK and our Nordic neighbours.»

Water purification in Bangladesh

After the inception of the SRSA's International Department in the late 1980:s, with extremely limited experience and resources, the Department managed to carry out a large number of international operations in connection with refugee crises, in the space of just a few years.

Preparedness, capacity and procedures were developed, which were put to good use, even in other contexts. Demand began to rise for operations in response to natural disasters, such as Hurricane Mitch in Central America and the flooding in Poland in 1998.

Tord Schyberg, who had been involved in constructing base camps for UN personnel in Kenya, was appointed as team leader for the SRSA operation in response to the flooding in Bangladesh in 1998. Almost two thirds of the country had been left under water and millions of people had had to abandon their homes. The SRSA's task was to set up a water purification plant in the capital, Dhaka.

"Once we got there, we found out that there was a water supply for the 'better' parts of town, while the poor went without," explains Tord Schyberg.

With help from a representative of the local water purification organization, the Swedish team managed to set up a water purification plant that was then connected to an abandoned water station, a remnant of British colonial rule. It distributed water to local water points.

«The floodwater we used was really dirty, but in reality there is no water so dirty that it can’t be purified. It's all about how many basins the water passes through, how the plant is managed, how often the filters are changed, and so on. »

Within two months, the Swedish team had set up water distribution to at least 3,000 families

in a poor area, where previously the only options had been impure floodwater or bottled mineral water.

<The operation ended with a big inauguration ceremony, where the local people built a stage and welcomed us with great celebration, almost as though we were rock stars,> remembers Tord Schyberg with a warm smile.

Experts and recovery

By the turn of the millennium, the SRSA had built up a diverse bank of experience. Swedish personnel were in demand, both in support teams and as expert advisors on the teams of the UN bodies. In the aftermath of the Balkan conflict, the SRSA had also begun to work with recovery, on operations involving the construction of bridges, schools and housing.

As early as 1993 three Swedish delegates were involved in a new course run by the UN, in capacity building for fast assessment of the need for aid in the context of major natural disasters. Since then, the SRSA has been involved in a new kind of mission, through Swedish personnel being involved in UNDAC, the United Nations Disaster Assessment Coordination body.

«Over time, we have developed our experience of international work, and other organizations have experienced us and our work. We have a structure, handbooks and modules for equipment and personnel. At the same time, we're never completely prepared,» reflects Lars Bjergestam, who was one of the participants in the UN training course in I993.

Cooperation is the key

It is often impossible to know in advance whether a disaster situation is going to arise and how it will develop. Over the years, the SRSA has carried out international operations in situations such as civil wars, earthquakes, forest fires, flooding, landslides, hurricanes and oil spills. While the basic human needs for those affected and for the operational personnel are the same, each situation is also unique.

"The solution for new situations is often found through cooperation. During the I995 Ebola epidemic in Kikwit in what was then Zaire, we worked with the Swedish National Board of Health and Welfare. Our transportation team flew medical equipment, beds, bed linen and water to the area, and we established a structure based around the Swedish doctors that worked for the SRSA over the course of the mission. You have to think creatively all the time, there's no stopping," says Lars Bjergestam.

The tsunami

The most immediate example is the tsunami that struck on 26 December 2004 - one of the most devastating natural disasters to hit the world in modern times. Around 230,000 people died or disappeared, and it was also one of the largest national disasters for Sweden and the Swedish people. The SRSA had three main tasks in Thailand after the tsunami: coordinating and supporting the work of other Swedish authorities and organizations, under the general consulate; organizing transportation of deceased Swedish residents back to Sweden; and coordinating support for the Swedish residents affected by the disaster. A major element of the work consisted of registering missing, injured and deceased Swedish residents. This task was extremely demanding, mentally and emotionally.

Leif Amdren, a fire brigade sub-officer from Gothenburg, was part of the first Swedish team to travel to Thailand on 29 December 2004.

«I had been on several operations previously, for example in response to the earthquakes in Turkey in 1999. People say that you get used to it, but I hope I never 'get used to it, although I do hope that I have learned how to handle the suffering you see in disaster situations. The tsunami situation was different though, it really got under your skin,» he recalls.

«The work we do is based on empathy. If I don't have empathy, I shouldn't continue in this line of work. However, we also have to take on a professional role. If I don't do this job, who else is going to do it?"

Increased capacity

Following the tsunami, the SRSA was charged with increasing Sweden's capacity to support Swedish residents affected by disasters abroad. This structure was put to the test in the summer of

2006, when Israeli troops invaded Lebanon. At the time, **Jan lapani** and **Tord Schyberg** were the team leaders of the SRSA Joint Response Team,
which worked with the Ministry for Foreign Affairs, the National Board of Health and Welfare, the Church of Sweden, the Police and others.

«The conflict situation escalated quickly while we were there. We had to redo our risk assessments constantly," remembers Tord Schyberg.

Cyprus was used as a base for transportation home for Swedish residents, and at a local level the SRSA collaborated with the Cypriot Civil Defence.

«We had a series of difficult situations to solve, like that of a family from Skovde who got stuck right in the middle of an area that was being bombed. In the end we managed to help them out by boat."

The crisis flared up in the summer, right e holiday season, which made the situation even more difficult. A total of 9,000 Swedish residents were transported home. At the same time, all accommodation and transport was fully booked - hotels, flights and boats. There was tough competition for the resources that were available, as other countries were also seeking to transport their residents via this area.

"We managed to organize logistics chains, accommodation, buses and flights. We distributed nappies and toys to families with young children. Another important element of the work was to help people deal with the difficult situations they had encountered.

"Regardless of our employer - the SRSA, the Ministry for Foreign Affairs, the National Board of Health and Welfare, or another organization – we worked as a team, and things went extremely well.»

Several dimensions of humanitarian aid

Twenty years after the first operation, the SRSAs work to develop and improve procedures and systems is still ongoing. On early operations, personnel and equipment were picked up along the way as temporary solutions. Today, ready-made structures are in place. However, the SRSA's knowledge and skills are constantly improving, and there is a strong awareness that what is currently done well could be done even better. A major part of this improvement is about including cultural, ethnic and gender-related perspectives in our operations - both in order to make the most of our experience and to ensure that our operations benefit all.

«It`s about methods and attitudes, but also about practical solutions. We should not just be building housing that is adapted for the climate. It should also be adapted for gender concerns, with separate showers for men and women, and constructed with attention to the ethnic and religious context,» explains **Lars Johansson**, head of a section of the International Department.

Political support from an early stage

Today, the UN and the EU regularly call on the SRSA in the context of international aid operations. There are many reasons for this, primarily the political support and the clear mandate to support the UN that the SRSA me Swedish government, which was taken on board by an enthusiastic and committed Director General.

The SRSA also had the right skills and experience for rescue operations in unexpected areas such as search and rescue work in earthquake zones, where the rescue dogs that had been trained for civil defense work were suited to the task like hand in glove. The necessary skills were also present in more obvious places, among the military, medical and rescue personnel that were trained to be able to solve difficult situations under demanding circumstances.

Many also mention other strengths that are common among the Swedish teams.

"We are not particularly formal. Doctors from Swedish teams will happily help dig ditches if that's what needs to be done. We can tackle any tasks," says fire chief **Leif Andren**, who has built refugee housing and bridges in Bosnia and been involved in earthquake operations, the aftermath of the tsunami and arranging transport home from Lebanon for Swedish residents.

Head of section Lars Johansson has a different explanation:

"Whatever we do, we do it with passion and commitment. It's never a problem to get people to give up their evenings and weekends. We have a strong interest in all things humanitarian."

Driving through the danger-zone

"The Swedish support team was asked to take responsibility for transporting supplies between the airport and the city centre, along an infamous stretch of road known as Snipers' Alley."

THE LONGEST AND MOST extensive mission that the SRSA's International Department carried out in its first 20 years was transporting supplies in the former Yugoslavia. Kjell Larsson, head of the international department of SRSA, was involved from the outset in 1992, and looking back he recognises it as an extremely dangerous operation. He doubts whether these journeys would be carried out if the same circumstances existed today.

"It was difficult to assess the safety of the area. But there was desperate need among the civilian population. Following a request from the UN, the Swedish support team was stationed in Sarajevo and asked to take responsibility for transporting supplies between the airport and the city centre, along an infamous 3 km stretch of road known as Snipers' Alley," says Kjell Larsson.

For one week, the team drove food, medicine, tents, blankets and other supplies into the city from the airport. However, the UN soon judged the work to be too risky. There was gunfire every day and one convoy had to seek shelter after a number of grenades detonated around them.

"The Swedish support team was transferred to Split in southern Croatia. From there, supplies were driven eastwards over the mountains to Vitez and Sarajevo. The roads were practically non-existent, more like dirt tracks, but it was a safer route," explains Kjell Larsson.

HE PARTICIPATED IN some of the journeys, and has one unforgettable memory from Vitez.

"We were staying in a building with walls made of plywood. In the room next door was a Danish mercenary soldier - ravaged, drunk and armed. He offered us beer and made it more or less impossible to say no. Then he proudly told us all about how he had killed innocent people. It was horrific and frightening. Sleeping next door to his room, which was full of ammunition and explosives, was pretty uncomfortable. It was a relief to be able to leave the next morning."

Kjell Larsson's primary responsibility was ensuring that the transport of supplies happened as smoothly as possible, and that things like storage management, administration, procurement and repairs did not cause any problems for the personnel in the field. Sometimes this involved bending the rules a little.

"On one occasion we were told there was a major shortage of infant formula. This information came just hours before a flight was due to leave from Sturup airport in Skane, southern Sweden. Through our contacts we were able to get hold of a large amount of formula in the middle of the night, from a local shopkeeper. We're not really supposed to do that, but we managed to get it onto the flight," remembers Kjell Larsson.

He was constantly aware that the risk of being criticized and challenged was inherent to the mission. In the context of the lack of safety in the area, the slightest mistake could change people's view of the operation.

"It's hard to draw the line between what we should and shouldn't do. If something was to go wrong it would be easy for people to say we were amateurs in a war zone and that we had no right to be there," says Kjell Larsson.

The SRSA also helped with refugee transportation. That caused several situations where safety was compromised. Our convoys were shot at on several occasions and stones were thrown at the vehicles. One convoy got stuck at the line of fighting and several refugees died in the crush of people trying to board the trucks.

"WORKING IN CONDITIONS that are this dangerous, controversial, physically strenuous and exhausting really help the team to bond, but it also takes its toll on your mental and physical health. I was transferred to another position in 1993, and I later returned to Bosnia. On my return I saw the conflict from a different perspective. When I visited the village of Cajnice, the mayor proudly showed me how they had fired shells at the neighbouring area from the village. I was in that very area one year earlier - being shelled," recounts Kjell Larsson.

When the SRSA's operation drew to a close in 1994, they had transported a total of 27,000 tons of supplies and 10,000 refugees.

Setting up a lifeline in disaster situations

"I often arrive in the field at an early stage in disaster situation, before any communications equipment gets there. So there can be a lot of problem solving to be done.''

ALTHOUGH Per Hallenborg has done IT and communications work on about ten SRSA operations, the lasting impressions he carries with him have nothing to do with technology. His strongest memory is of meeting a group of refugees in the rainforests of the Democratic Republic of Congo.

For operational personnel in the field, communication is both a lifeline and an essential tool for the job. Contact with the outside world is vital in order to be able to give and receive information and request assistance, equipment and other resources — even for the most self-sufficient team.

"Short wave radio often forms the basis of our communication. It's a stable system that's easy to use, free, and is always the last thing to stop working in difficult conditions. Satellite communication is more of a bonus," explains Per Hallenborg.

"I often arrive in the field at an early stage in a disaster situation, before any communications equipment gets there. So there can be a lot of problem solving to be done."

Per Hallenborg joined his first operation in 1997, three years after the mass genocide in Rwanda, when around two million Hutus fled the country, many to the Democratic Republic of Congo. The aim of the operation was to transport refugees back to their homes in Rwanda.

AT THE TIME OF the operation, civil war was raging in the Democratic Republic of Congo. Laurent Kabila was advancing through the country with a militia mostly made up of Tutsis — the ethnic group responsible for the genocide of the Hutus — planning to overthrow President Mobuto.

The situation for the refugees was dire. Some of them were able to take refuge in rural villages. Others fled to the rainforest and tried to survive a nomadic existence. Fear and suspicion reigned.

The fear of Kabila's rebels drove the refugees westwards, and so a UN office was established in Mbandaka in the west of the country, 3000km from Rwanda. "We had received information that there was a group of refugees in the rainforest further up the River Congo, and we went to find them by boat. We found over 300 people, many of whom were in a serious condition," says Per Hallenborg.

"IT WAS AN ENORMOUS privilege to have the opportunity to help them. I gave out energy biscuits to the children. I could see their joy and gratitude as they lined up to get biscuits."

Per Hallenborg's team took the refugees to their base, where the were registered and given medical care and help to get home.

The refugees who lived in the villages lived with Hutu families or other friendly tribes. It wasn't easy for them to determine whether the UN team were friends or enemies, and they often went into hiding when the teams arrived.

"We solved that problem by giving the village elders standard small radio receivers, and then we broadcast information explaining who we were and what we were trying to do."

ALTHOUGH PER HALLENBORG's job description only covers operational IT and communications work, in reality his tasks vary widely. He could end up working on electricity, water supplies, sanitation, or building field offices or housing. That's one of the most enjoyable things about going on a mission — that everyone helps and supports each other. It's possible to solve any problem when you don't think in terms of prestige and hierarchy. Swedes have a reputation for doing what needs done, regardless of their normal responsibilities - and they are loved for it.

"When the SRSA comes to town, everybody can relax..."

Mission in paradise

"I couldn't sleep at night, wondering how things were in Aceh and whether my friends there had survived."

WHEN NURSE Eva Ringvall arrived in Indonesia's Aceh province in 2002, in the midst of a civil war, she was struck by its beauty.

"It was a remarkable situation in many ways. The war was ever-present, threats and violence were all around, and it was difficult to enter the area. At the same time, it was like an untouched paradise." Eva Ringvall's mission was to work with a Swedish colleague to establish medical support for the peace observers who would be working in the area. Seven more people from the SRSA assisted with the logistics side of the project. In reality, many of the tasks were shared.

"As far as possible we tried to carry out the operation using local resources, which meant finding and buying everything we needed locally - cars, food, clothes, furniture, computers, paper — everything," says Eva Ringvall.

She even made clothes for the peace observer team.

THE MEDICAL SUPPORT Was Set up to provide emergency care following gunfire and road traffic accidents, and to deal with flesh wounds and infectious diseases. It was to provide everything from plasters, first aid and medication to facilities for fast air transportation to hospital.

"We travelled around with interpreters trying to source the equipment we needed. I remember one time we spent ages looking for first aid supplies and eventually found a roll of gauze fabric in a chemist's shop. Then I sat in my hotel room and cut it up to make bandages."

After six months, a new Swedish team arrived to relieve Eva and her SRSA colleagues.

TWO YEARS LATER, when the tsunami came, Eva Ringvall was working for the SRSA in Darfur. "I couldn't sleep at night, wondering how things were in Aceh and whether my friends there had survived."

When she was asked to return to Aceh for another logistics and medical support operation, it was with mixed feelings that she agreed to go.

"When I arrived I couldn't believe my eyes. It wasn't the same country. Houses had been dragged into the sea and huge areas had been laid waste by the salt water. There was no plant life, just earth and rocks. But I encountered the same warm, friendly spirit as before."

Eva Ringvall's earlier experience of the country and of sourcing equipment locally was put to good use in this operation.

"One positive thing about the tsunami was that it meant that international organisations were allowed to enter the area, which brought a sense of calm and order to the peace process."

From chaos to order

"It was the first time the SRSA's International Department had carried out an operation on behalf of residents of Sweden. It really affected a lot of the personnel working there''

LENNART LARSSON Was in the middle of installing the TV that his daughter had received for Christmas when programming was interrupted for an emergency broadcast. A major tidal wave disaster had taken place in South East Asia. It was 26 December 2004.

At that point, he had no idea that four months later he would be at Pearl Village Hotel in Phuket, Thailand, managing the SRSA's operational team.

"It was a major challenge. When I look back I see two things. Firstly, the difficult work of finding the best way to take care of the victims and their relatives. Secondly, the comradeship, sense of community, and motivation that permeated the team," recalls Lennart Larsson.

THE PERIOD DIRECTLY following the tsunami was chaotic, but by the time Lennart Larsson took over as incident commander in April, there was a working structure in place and cooperation between authorities and organisations was functioning well.

"Nonetheless, the situation was still very unusual. It was the first time the SRSA's International Department had carried out an operation on behalf of residents of Sweden. It really affected a lot of the personnel working there," says Lennart Larsson.

The operations were mentally and emotionally gruelling, particularly during periods when many victims were identified and sent home, or when there were large numbers of child victims.

One important guiding principle was that the work was to be characterised by dignity and respect. A total of 69 homecoming ceremonies for deceased swedes were carried out at Phuket airport for personnel and relatives, led by Swedish pastors. Each ceremony was different, but hymn 256 from the Swedish Hymnal - Don't be afraid — was sung every time.

"Every ceremony was meaningful, and for the personnel represented a worthy conclusion to a lengthy and demanding process," says Lennart Larsson.

THE TASK OF SUPPORTING the large number of survivors and family members presented a number of challenges.

"Many of those affected had specific requests, like wanting to visit a particular place or hospital or get in touch with a person who drove them out of the danger zone on a moped. Many were in various stages of shock, and it was our job to give them as much support as possible."

The external conditions for the work were excellent, which helped a great deal. The Thai authorities were helpful and cooperation worked smoothly. There was a real sense of community shared by the different actors in the area.

"IT WAS FANTASTIC TO see so many people from different Swedish authorities and organisations all working towards the same goals. And the Thai authorities openness to Swedish and other foreign authorities was admirable — and probably unique from an international point of view," says Lennart Larsson.

One of the tasks of the incident commander, which demand an ability to listen and communicate clearly, is to support colleagues in the field. The enormous commitment of the personnel to the work at hand could occasionally put their mental or physical health at risk.

"It's all about employer responsibility. On occasion I did have to speak privately to colleagues to advise them not to stretch themselves too far," explains Lennart Larsson.

As well as working as incident commander in Thailand for two periods in 2005, Lennart Lars-son has also participated in other dramatic operations in various countries, including Iraq. These operations have changed his perspective on life.

"I hope and believe that I have become more humble, and that I value everyday life more. Sometimes I find it hard to understand when someone at work gets upset about a broken photocopier, for example," chuckles Lennart Larsson.

Drama in Darfur

"Curfews were enforced at night so planes carrying casualties couldn't leave"

NURSE Monica Sandvall and her colleagues arrived in Darfur in Sudan in 2005. She was there to run a medical clinic, along with five other nurses and one doctor, for operational personnel working in the refugee camps.

"Most of the time we were dealing with diarrhoea cases and people who thought they had malaria. Many of them worked hard and several were terribly overworked. There was a risk that their health could deteriorate acutely."

There was unrest in the area. Curfews were enforced at night so planes carrying casualties couldn't leave. The clinic was designed to deal with two badly injured or seriously ill patients at a time for 48 hours.

ONE DAY AN AMERICAN team came in with a woman who had been shot in the head while travelling in a convoy.

"She had had a blood transfusion at a clinic in another village, with blood donated by an American man in her team. She came to our town, Nyala, and was to be transported out of Darfur from there."

"When the group arrived our doctor wasn't there, and as the most highly trained person present I was responsible for treating the woman. At the same time, there was a tense atmosphere and everyone had an opinion on what was to be done. I thought the woman should be taken somewhere with better medical care as quickly as possible, and that her transport route should be as direct as possible. But the doctor who had come in to the clinic with the woman had a different reaction. In a situation like that it can be difficult to be a woman and a nurse in a foreign environment."

Monica Sandvall managed to stay calm and stand her ground. The woman was flown to Khartoum for a CAT scan, then on to Nairobi.

"The clinic doctor and I accompanied the woman. Things went relatively well — the woman lost an eye but apart from that she pulled through."

Monica Sandvall spent three months with the medical team in 2005, and returned to Darfur in 2006 to train the African Union peacekeeping troops in first aid, health and hygiene.

A forgotten disaster

"This international presence has a stabilising influence and contributes to increasing safety for the civilian population."

THE CRISIS IN THE Central African Republic is one of the worst humanitarian disasters in the world. However, it is a low-intensity conflict of which most people are unaware. Conflict between government troops and rebel groups has forced hundreds of thousands of people to flee their homes and go into hiding in the inaccessible terrain.

"The outside world hardly gives any attention to the situation in the country. There are many reasons for this, including the fact that the country is land-locked and isolated from natural transport routes. There are also many larger-scale crises going on in neighbouring countries," explains Kajsa Eriksson from the International Department of the SRSA.

SHE HAS PARTICIPATED in several operations in the country. All of these have been under the auspices of the SRSA, and the purpose of her role as Field Liaison Officer in the most recent operation was to support the UN OCHA in establishing field offices in the cities of Paoua and N'Dele, near the border with Chad.

"The offices make it possible to get closer to those in greatest need and make the distribution of aid from the UN and other organisations more effective," says Kajsa Eriksson.

In practice, the task consists of ensuring that logistics and administration function smoothly, as well as performing traditional OCHA tasks in humanitarian coordination, both in the capital city of Bangui and in the field. She provided support for the SRSA's construction team, which was responsible for construction of the field office in Paoua, by arranging convoys to transport construction equipment, purchasing equipment, helping with bank-related matters, managing contact with the construction company, and more. "This is an extremely poor country with scarcely any growth and no industry to speak of. Those are just a couple of many factors that affect the long-term development of the country," says Kajsa Eriksson.

FOR A LONG TIME, the situation in the country has been made more difficult by the ongoing conflict and the criminal gangs that wreak havoc in rural areas. Hospitals and schools are destroyed and civilians are attacked. It is estimated that a total of one million people have been affected by the crisis. Over half of these are children.

"The aid from Sweden is expected to contribute to ensuring that those affected by the crisis gain better access to food and basic necessities as well as seed, agricultural tools, education and health care. The offices are used by NGOs as well as the UN. This new international presence has a stabilising influence and contributes to increasing safety for the civilian population, which is one of the main goals of the humanitarian aid work in the area," explains Kajsa Eriksson.

She believes the media will continue to overlook the crisis. At the moment there are no signs that more people are taking note of what's going on. Nonetheless, the two offices that have been completed make it possible for aid to reach many of those worst hit by the crisis in the Central African Republic, faster.

BACK AT THE TIME OF the earthquake in Armenia, it became clear that Sweden had a unique asset in search and rescue work: rescue dogs.

At the time, the Swedish Civil Defence League had a focus on potential threat situations in which Sweden could be targeted in large-scale bombings. Civilians were to take refuge in shelters until after the bombings, when rescue divisions would use rescue dogs to find them.

The dogs were trained to work in conditions that were more or less identical to the conditions in an urban area following an earthquake.

After the earthquake in Armenia in 1988 captured the world's attention, there was a meeting of representatives of the different countries that, like Sweden, had sent teams to the disaster area.

They established that although the search and rescue teams had done excellent work, there were shortcomings in their preparations and in coordination between them. There was a need to develop international preparedness and draw up guidelines on how to help the affected countries.

The INSARAG Network (International Search and Rescue Advisory Group) was created for countries in earthquake risk zones and countries with the capacity to offer search and rescue teams. One of these countries was Sweden.

In 1991, the Swedish government charged the SRSA with maintaining preparedness for international search and rescue operations. Contracts were signed with the emergency services in large municipalities, with the Swedish Working Dogs Association and with large county councils, for emergency medical personnel. A training exercise was held at the SRSA College in Rosersberg in 1995.

The earthquake in Turkey in 1999

"When I came to the SRSA in 1997, we had had disaster preparedness for 6-7 years, but it had not been used. People began to question whether we should keep it going," says Per-Anders Berthlin, who was the SRSA's representative in the INSARAG Network.

"I had the privilege of helping to develop the INSARAG guidelines, and they were adopted in June 1999. Once I got back to Sweden, before my summer holiday was due to start, I began to think about how the lessons learned in INSARAG could be put to use in our disaster preparedness. Then the earthquake in Turkey happened in August 1999," recalls Per-Anders Berthlin.

Mobilisation of personnel was put into action according to the plan drawn up in 1991. It became clear that there were many elements that had been forgotten about over the years, and temporary solutions had to be used in the recruitment process.

Everything was rubble

One of the people whose help was requested and who agreed was Eva Ringvall, a nurse from Gothenburg.

"We landed in Istanbul and were taken straight to the earthquake zone. There was only rubble, stretching as far as the eye could see. An incredibly large area had been devastated. And in the midst of it all, people were trawling through the debris, searching for their relatives. It felt surreal somehow," recalls Eva Ringvall.

"The weather was extremely hot - it was 45°C at our base camp. The stench of dead bodies lay heavy over the city and a layer of grey dust covered everything. You couldn't even see a single blade of grass."

Eva Ringvall's abiding memory from the operation is of the rescue of an elderly man who survived the earthquake.

"The feeling is hard to describe. The crowds applauded and everyone helped get him out. It was a breathtaking experience."

Criticism of late operations

The Swedish team arrived on site 44 hours after the disaster happened. By then, the chances of finding survivors were limited as a result of the heat.

"At that time there was a major debate in the media about why it had taken so long to get a Swedish team on site. In those days, however, the SRSA didn't have a mandate to launch an operation independently. We needed a government decision every time. From the minute we received a government decision, it took us 24 hours to get to the disaster zone. Our mobilisation was fast, but still too slow for this kind of operation," says Per-Anders Berthlin.

Search and rescue work is different from other international aid operations, because the time factor is so crucial. The quality of preparedness is really put to the test.

Two crucial decisions

The criticism that was expressed after the operation in Turkey paved the way for two decisions that have been crucial to the SR-SA's potential to get a fast start in international operations.

The first relates to how decisions regarding operations are made. The Director General of the SRSA was given a mandate to make decisions on operations in consultation with Sida and the Ministry for Foreign Affairs, on the basis that funding is available.

The second important decision earmarked special funding for international operations, and this means that a civil servant can release funds. Before this, there was a standard application procedure, and this process involved decisions at several levels.

"Today we have a system that means that the SRSA can launch operations immediately, without formal obstacles. The EU collaboration in this area, known as the Community Mechanism, also arose from discussions on search and rescue work."

Eleven years passed between the first operation in Armenia and the operation in Turkey in 1999. As has been mentioned, before the operation in Turkey the SRSA began to question whether it should continue to maintain preparedness for similar operations. The earthquake in Turkey changed everything. Needs became more clear-cut, and it was evident that preparedness should be developed, not dropped.

Turkey hit by another earthquake

"When we got back after the operation in Turkey in August, we started to review our mobilisation plan and updated our methods, equipment and technology. In reality, we hadn't yet finished this work when another earthquake hit Turkey, in November of the same year," says Per-Anders Berthlin. "During the August operations, coordination between the different teams was not good. As a result, we may have searched some areas several times and missed other areas. Three months later, the difference was like night and day. All the groups involved had recognised the problem and agreed to cooperate with each other and with the Turkish authorities."

The INSARAG Network, which began with around 20 participating countries, mostly in Europe, has grown over time and is now a global network with around 100 member countries.

"The development of guidelines for search and rescue work now focuses increasingly on having rapid procedures, not least in the sense that countries in earthquake risk zones must request international help quickly should the need arise. Chances of survival diminish drastically in the first 24 hours. Countries responding to the request for help should have a team in the air within ten hours of receiving the call."

Search and rescue tools

Rescue dogs remain the most important tool in the search for survivors. In Sweden, the Swedish Working Dogs' Association is responsible for training rescue dogs.

These are privately owned dogs, so a wide variety of breeds are represented. Although particularly small or large dogs may not be suitable, the most crucial attribute is not physical - it is mental stability. Training a rescue dog takes around a year and a half, and is combined with suitability tests.

Several kinds of technical tools are also used, including seismic sensors and camera equipment. These are mainly used for more precise localisation after the dogs have marked particular areas. Seismic sensors are placed on the rubble in the area marked by the dog. They make it easier to listen for scraping or knocking sounds under the rubble.

The camera equipment consists of an 'eye', a camera lens on a telescopic arm that can be inserted into cavities to find survivors. The camera also makes it possible to see how the rubble is positioned, which helps in deciding how to dig survivors out as safely as possible.

Training of operational personnel

Jan-Olof Sail trains the SRSA's search and rescue team.

"In our training programme for rescue personnel we cover the safest way to go in to rescue survivors who are trapped in rubble. It's important to prop up your entry point, ensure a safe way out, and so on," he explains.

The training programme also covers the INSARAG guidelines for search and rescue work, and how to use the equipment that is sent with the team.

During training, the rescue personnel are matched up with rescue dogs to give them time to build up a good working relationship.

The SRSA's most recent search and rescue operation was in the aftermath of the earthquake in Algeria in 2003. Jan-Olof Sail joined the team as rescue dog coordinator.

"The international operations were oversized. The consequences of the earthquake were not as far-reaching as had been feared. Nonetheless, it was good that we went. It acted as confirmation that our preparedness was working," he says.

"The work of a dog coordinator includes organising the work of the dog teams, maintaining contact with border vets and generally ensuring that the dogs remain healthy. This might include checking that they are given plenty of fluid in hot conditions, and that they have special shoes for walking on sharp debris so they don't get cuts on their paws."

Jan-Olof Sail believes that the fact that the Swedish search and rescue team uses privately owned dogs is a tremendous strength.

"The dogs are well-trained and remain healthy during the operations. The dog handlers always put the needs of their dogs first and their own needs second."

After the earthquake

"You really do value life in an entirely different way after an operation like this, and you see what's important and what really doesn't matter/'

ON 7DECEMBER 1988 there was an earthquake in Armenia, in what was then the USSR. About 25,000 people lost their lives.

The very next day, the SRSA had begun planning an operation there, at the request of the Swedish Ministry of Defence. The day after that, the USSR sent a request for help.

By Saturday 10 December, the Swedish team was in Leninakan, following an eight-hour wait for visas at Moscow airport.

"The old buildings were more or less still standing, but all the more recent architecture had collapsed. The situation was chaotic. As soon as our convoy of trucks arrived in the main square in Leninakan, people started trying to steal their contents. The drivers had to defend the vehicles with iron piping," recalls Gunnar Frycklund, who, with his wife Yvonne, participated in the operation as a dog handler. Several international organisations were present in Leninakan to conduct search and rescue work, but there were no government officials to meet and coordinate the arriving teams.

"Some areas were probably searched several times and others not at all," says Yvonne Frycklund

Wherever the team went, people begged them for help to find missing friends and relatives. Opposite our base camp there was a textile factory where the local people thought there might be some survivors, so it was natural to start there.

"I sharpened my senses as I entered the factory with the dog, filled with a sense of gravity. But the dog just turned and looked at me as if to say 'what on earth are you doing?'" remembers Gunnar Frycklund.

"Then I realised that it was still a game for the dog. And that when I was that serious I wasn't the same dog handler anymore."

THE TEAM DID NOT FIND any Survivors in the textile factory. They headed towards the town centre and their search proved more fruitful there.

"We passed a house that was still under construction, and people told us there was no point searching there since no-one had moved into the house yet. But the dogs were clearly interested and wouldn't give up," remembers Yvonne Frycklund.

Nine metres down in a lift shaft they found 14 construction workers who had survived. It was a wonderful moment.

A TOTAL OF ABOUT 450 people were brought out of the rubble of the town alive. There is no data available on exactly how many were saved as a result of the Swedish operation, as the team's responsibility focused on searching, not on rescue work.

THE SWEDISH TEAM soon noticed that their dogs had skills that other teams lacked. The French and Swiss teams had mountain rescue dogs that picked up the scent of survivors, corpses, and items of clothing alike, just as mountain rescue dogs are trained to do.

"They came and asked us to bring our dogs to help them determine whether the people their dogs had found were alive or dead," recalls Yvonne Frycklund.

THE SWEDISH RESCUE DOGS were trained for civil defence purposes, like searching for survivors in the aftermath of urban bombings. In practice that meant searching through collapsed buildings where there could be survivors in underground shelters or under piles of rubble. The Swedish dogs had never found dead people before, and when they encountered that situation they each reacted very differently.

"We were pretty harsh. There was a collection point for coffins beside our base camp, and we took the dogs to the coffins so that each handler would find out how their dog reacted. That was how we learned to distinguish between the dogs' signals for survivors and dead bodies," says Gunnar Frycklund.

The conditions in Leninakan were gruelling. The team slept in Swedish military tents, and had to gather timber from the rubble to build fires to keep warm. The temperature hovered around zero. They cooked their freeze-dried food with mineral water, which was the only water available.

"In those conditions we were lucky to have each other. We were the only couple in the team," says Yvonne Frycklund.

ONCE THEY CAME HOME from the 10-day operation, fatigue set in. Upon arrival in Sweden the dogs were placed in quarantine for four months, causing great frustration among the handlers as they had hoped the SRSA would manage to negotiate exemption from quarantine. This had proved impossible.

All the team members also saw a psychologist.

"That was really helpful. For us it was particularly useful to find out that we could get sudden delayed reactions."

"At home on New Year's Eve, we started to argue and it almost reached the point of broken crockery. Suddenly we realised that this was our delayed reaction, and we were able to laugh about it instead," recalls Gunnar Frycklund.

"When I got back I read a headline that said 'Catastrophe! Petrol prices soar' and it seemed unbelievable. You really do value life in an entirely different way after an operation like this, and you see what's important and what really doesn't matter," says Yvonne Frycklund emphatically.

ALMOST ELEVEN YEARS LATER, the Frycklunds were asked to participate in the SRSA search and rescue team following the earthquake in Turkey in August 1999. They didn't hesitate for a second.

"I have never regretted participating in this kind of work, not for a moment. It's given me an entirely different perspective on life," says Gunnar Frycklund.

"When I see similar incidents on television now, I see them in a completely different light. They seem so real that I can almost smell it."

A GENDER PERSPECTIVE IS NECESSARY

Without a gender perspective, assistance for those affected by disasters and conflicts risks missing half of the population. In practical terms, this could involve dealing with mines beside a well where women collect water, or a shortage of cooking equipment, or locating a group of women in the rubble following an earthquake.

The differing social roles of men and women - in terms of responsibility, tasks, rights and responsibilities - can cause them to be affected in different ways by disasters and conflicts. That's why international operations need a gender perspective. An important element of this is ensuring that there are women participating in the work and being involved in decisions at every stage of an operation - planning, implementation, and evaluation.The SRSA works to ensure that its operations reach all of those affected by disasters and conflicts.

"The gender perspective is necessary to ensure that the SRSA provides balanced assistance through high quality, effective operations,"says Susanne Kozak, gender advisor at the International Department of the SRSA.

UN Resolution 1325 acts as a guiding light for the SRSA's work on gender. It highlights the importance of women's participation in conflict resolution and decision-making on reconstruction of a society after a conflict. The resolution also mentions the vulnerable position of women in conflict situations, and the international community's responsibility to counteract this. In practical terms, this means that women must be given the opportunity to express their problems and needs, and to participate in finding solutions to these problems.

INTERNAL AND EXTERNAL ASPECTS

For the first ten years of SRSA international work, men formed the overwhelming majority of operational staff and managers. "For a long time we were aware of the dangers of poor gender management. Unfortunately it was mostly talk and little action, until gender issues entered public debate after the turn of the millennium.

The Swedish armed forces had also given us cautionary examples of soldiers in Kosovo competing in terms of sexual conquests, and we realised it was time to go from talk to action," says Kjell Larsson, Head of the International Department.

When the SRSA went through a restructuring process in 2003, the first gender advisor was recruited. To begin with, the focus was on changing attitudes within the organisation and training personnel - both operational personnel and managers - on the importance of a gender perspective in operations. The gender advisor supported SRSA project managers in bringing a gender perspective into the planning, implementation and evaluation of the operations.

The SRSA's work on gender has both internal and external aspects. Internally, it involves looking at gender distribution among operational personnel and changing attitudes. The external perspective focuses on ensuring that the content of operations benefits women as much as men.

"UN Resolution 1325 brought a real breakthrough in terms of why and how women should participate in our operations. The resolution was the argument that I needed, as a manager, to implement a consistent gender perspective and motivate my colleagues,"explains Kjell Larsson.

In 2005, a study called Obstacles and opportunities for the implementation of Resolution 1325 was carried out. The continuing gender work of the SRSA is informed by the results and recommendations of this report.

GENDER PERSPECTIVE IN ALL AREAS

All parts of the SRSA's work should have an inherent gender perspective. The goal is even gender distribution, with women making up at least 40 percent of operational personnel. This is not just a question of fairness, but often also a prerequisite for reaching and cooperating with women in affected areas. In many situations it has become apparent that female operational personnel are in a better position to speak to women and grasp their specific needs. What's more, in some countries it is unthinkable for women to turn to male aid workers for help, for example if they need medical care or maternity care.

Knowledge and the chance to reflect on each person's role are important elements of ensuring that the gender perspective permeates all operations. The SRSA's project managers and operational personnel are trained in gender issues and receive specific information on the situation for women in the country in which they are going to work.

GOOD EXAMPLES

The SRSA's base camp concept has been developed in recent years to suit both men and women. For example, base camps have separate, private toilet and shower areas.

For many of its projects the SRSA recruits local workers such as electricians, logisticians and mine clearers. An even gender distribution is sought after in this area too.

One example of how the SRSA works with gender issues is an operation carried out in 2007. The mission was to drive 28 all-terrain trucks from Kenya to southern Sudan for the UNHCR.The mission also included training drivers in the field. Through contact with the national association of Swedish Women's Voluntary Motor Transport Corps, it was possible to recruit two female driving

instructors, of a total of four. Among the positive effects of this even gender distribution was the fact that two women from the local population were chosen to learn to drive the all-terrain trucks.

"Our experience shows that it is possible to break patterns, and that the operations are better as a result," says Susanne Kozak. Unfortunately, it is difficult to recruit women in countries where there are strict social codes regarding what women can and cannot do. In such cases, it is important to present the women who are recruited as role models and good examples.

GENDERFORCE

The SRSA forms part of a partnership called Genderforce, along with the Swedish armed forces, the police, the Swedish Association of Armed Forces Officers, the
Swedish Women's Voluntary Defence Service, and the Kvinna till Kvinna Foundation. Genderforce began with a project based on improving Swedish work in disaster and conflict zones to ensure that the results benefit the entire population of the area; that opinions and needs from all groups in society are respected, and that human rights and democratic values are strengthened. The project came to a close at the end of 2007, but the partnership is still going strong with the addition of a new partner, the Folke Bernadotte Academy.

GENDER WORK TODAY AND IN THE FUTURE

Today, the SRSA's work on gender has changed its focus. Awareness of gender issues has increased, and personnel are looking for practical tips on what they can do in this area. A new equality handbook provides help, giving tips, good examples and checklists to ensure that a gender perspective can be applied in all operations, regardless of whether they involve bridge construction, mine action, search and rescue work or other kinds of work. The handbook is also designed for use in training managers and operational personnel. Today, the gender perspective is included in the evaluation of every operation. In the case of some larger projects, more in-depth gender analyses are carried out, and as knowledge levels have been raised and the gender perspective integrated into the organisation, the gender advisors can focus on developing and deepening this work.

Another way of working is to carry out what the SRSA calls a gender audit. This involves both qualitative evaluation of how the SRSA's work on gender is developing, and quantitative measurements of the changes in the proportion of women among operational personnel. Although a lot has happened in a short time, Kjell Larsson emphasises that it is important continue working with basic issues such as attitudes.

"If we let our work on gender issues slide, we risk falling straight back into old patterns. We should not be deluded into thinking that we have finished this work once and for all."

WHEN THE YUGOSLAV FORCES gave up and retreated from Kosovo in June 1999, following Nato's 79-day strategic bombing campaign, they left behind large numbers of mines and unexploded ordnance in the country. This was a major obstacle, both for the work of the peacekeeping troops and for the country's future reconstruction.

Large areas of agricultural land were rendered useless because of the risks. Mines and unexploded ordnance were also present in industrial areas, towns, villages and roadsides, preventing many refugees from returning home.

Immediately after the ceasefire, the Swedish International Development Cooperation Agency (Sida) tasked the SRSA with an assessment mission in Kosovo, to assess needs in terms of humanitarian aid. During this operation, UNMIK, the UN-led civil administration in Kosovo, requested help with an international demining operation. The SRSA suggested to Sida that demining should be included in the Swedish aid operation. Following Sida's approval, this operation began in September 1999.

The first project

The SRSA conducted its first mine action in Kosovo. The work covered three areas: development and administration of the IMSMA mine database; quality assurance of mine dog teams; and quality assurance of medical care.

THE ENEMIES OF MINES

DOGS

Mine dogs are specially trained to use their sense of smell to find and show the position of mines. Dog handlers dressed in protective attire lead the dogs. When a dog has located a mine, it sits or lies down to mark the spot, which is then cordoned off and investigated.

TOOLS

A trip wire sensor is used to check the area above ground. This is a straight metal wire about 40 to 50cm in length. The mine clearer hangs the wire down towards the ground. Then the wire is moved slowly backwards and forwards over the area to be cleared. When a trip wire is detected, the sensor swings back and the mine clearer can follow the trip wire to its source. Metal detectors are used to locate buried mines. When the alarm sounds, the mine clearer sits on their haunches or lies down. The area is then searched with a mine probe, a 30cm metal rod with a handle. The mine probe is angled and pressed down into the ground. Every time the movement of the probe is stopped by an object in the ground, which could be a stone or a mine, the mine clearer must carefully uncover the object, using a towel, until it is visible.

If the mine clearer locates a mine, the area is marked with a plastic cone or a flag. The mine clearer then returns to their starting point and closes off the path with two crossed sticks, to prevent anyone else from entering the mined area. At the end of the day, all the mines that have been found are destroyed simultaneously.

MACHINES

Armoured vehicles, mine ploughs, mine disposal robots and mine rollers are used to demine large areas.These machines drive in straight lines and detonate mines or lift them out of the ground. Mechanical mine clearing equipment is often used to prepare the ground first, cutting down vegetation, removing trip wires, and detonating mines. Mine ploughs are useful in humanitarian demining, as they offer fast access to mined areas. When they are attached to the front of a bulldozer, they detect mines and move them to one side. Mine rollers are effective on roads that are suspected to be mined, as they destroy and detonate mines using their weight. Although they are extremely heavy, difficult to transport and impossible to use on certain kinds of terrain, they are effective in the early stages of demining, as they make it possible to demine key routes quickly, thus restoring infrastructure.

IMSMA - AN INVALUABLE TOOL

The Information Management System for Mine Action (IMSMA) is a computerised tool that holds valuable information for management and decision-making in the context of demining operations, mine-risk education and mine-related incidents. The IMSMA can also follow up demining operations and help to analyse operations to make them more effective. The system has been in use since 1999 and is currently used for more than 80 percent of all mine action projects.

Rickard Hartmann, who currently manages the SRSA's mine action section, was a member of the team that was sent to Kosovo. He has a background as an army officer, trained at K4 in Arvidsjaur where he specialised in explosives. He began his work with the SRSA in Kosovo shortly after a military demining operation in the region.

"The work we did in Kosovo was a new kind of operation. We were largely facing modern weapons and ordnance that we'd never seen before, that had been left behind when Nato went in to fight the Serbian forces," explains Rickard Hartmann.

Step by step risk management

Mine action methods are characterised by systematic attention to safety and constant development. Information must be gathered on every type of mine or unexploded ordnance before demining can begin. International networks form an important source, as they can help identify and provide information on new types of mines and unexploded ordnance.

"Our working methods seek to limit the risks at every stage. It is an incredibly complex and multi-faceted area of work."

Rickard Hartmann illustrates his point with an example. There is an unexploded grenade in a house, and the assessment is that everything within 300 metres of the house is at risk. As a result, the goal cannot simply be to detonate the grenade. Instead there is a complex series of objectives - the ' area must be evacuated, and at the same time it is vital to avoid damaging buildings, roads, electric cables, and sewage systems.

"We have to take the safety of everyone in the area into consideration. Sometimes we even have to ensure that no airborne traffic enters the area, as in some cases the effect of a detonation can reach up to 1000 metres up into the atmosphere. Some types of ordnance also contain incendiary devices, so a detonation could lead to a major fire," explains Rickard Hartmann.

In practical terms alone, there are many ways to solve a situation involving an unexploded grenade or bomb in an urban area. The object could be moved, for example using a robot or a system of wires, in order to be disarmed in another location. It is also possible to send in personnel to fully or partly disarm the object by separating the ignition device from the explosive substance. If it is possible to limit the force of the detonation, placing sandbags around the object can reduce damage to the area. However, the area must always be evacuated in case something goes wrong.

Kosovo operation garnered attention

The SRSA completed its mine action operation in Kosovo in 2001, when the UN classified the area as free from unexploded ordnance and mines. Swedish support to the UN demining centre in Kosovo had led to growing international interest in the SRSA's services. Swedish personnel had contributed to the development of the UN's information systems for mine action, and had brought higher quality and better medical care skills to the demining organisations. Swedish personnel had also gained acclaim in their work on assuring the quality of mine dogs.

On the whole, the entire international demining operation in Kosovo was judged to be of a high standard, and it was hoped that international standards for demining could be raised, using the Kosovo operation as a benchmark.

Support for technical development

Aside from the Kosovo operation, the early years of the SRSA's mine-related work was largely composed of supporting the technical development of systems for demining.

FACTS ABOUT MINES

■ **An estimated 70 million mines are currently buried** in over 70 countries. That figure does not include large amounts of unexploded ordnance, such as grenades and airborne bombs. A large proportion of these are what is known as cluster bombs. Cluster bombs are capsules filled with hundreds of smaller bombs that spread out across a large area. Some of these bombs are duds, which do not detonate. They remain on the ground and can cause greater damage than anti-per sonnel mines.

■ **Every year up to 20,000 people are injured by mines.** That means that every hour, two people are maimed as a result of stepping on mines.

■ **In 2007, the Ottawa Convention was signed.** It prohibits the use, production and storage of anti-personnel mines. Since then, more than two thirds of the 46 countries that did manufacture mines have ceased to produce them. Trade in mines has more or less ground to a halt. A goal of clearing all mines by 2010 was also set up. By late 2007,156 nations had signed the Ottawa Convention.

■ **Countries with a large number of mines** include Afghanistan, Angola, Cambodia, El Salvador, Ethiopia, Kurdistan, Mozambique, Nicaragua, Somalia, Sudan, Vietnam, and Yemen.

■ **Unexploded ordnance, such as cluster bombs,** are not covered by the Ottawa Convention or any other international agreement. While the total number of mines decreases every year, the quantity of unexploded ordnance is increasing.

■ **Mines and unexpfoded ordnance prevent the long-term reconstruction of war-torn areas.** They prevent refugees and displaced persons from returning to their homes, getting medical care and cultivating their land. They also have a negative effect on the local environment and culture, as well as on hopes of achieving peace and reconciliation.

■ **A mine is a munition designed to explode in the presence of a person or vehicle.** There are two types of landmines: anti-personnel mines, which are detonated by the weight of a person; and anti-vehicle mines, which are detonated by the weight of a vehicle.

■ **In the area of mine action, Sweden and the SRSA are primarily active in mapping, marking and clearing mines,** as well as in quality assurance of mine dogs, demining training and emergency medical care. In most cases, this support is channelled through the UN national coordination centre for demining, or within the framework for the UN's rapid response mine action operations.

This included development of mechanical demining and the Swedish systems known as Scan-Jack, Oracle and Mine-Guzzler, which were tested in Croatia with the help of the SRSA.

In 2000 and 2001, the SRSA also supported the development of gas sensor systems and investigations into how explosive substances disperse in earth and air, as well as investigations of different filter materials used to detect explosive substances.

Cooperation between Swedish and international players was also developed from the beginning. In international terms, this cooperation has primarily taken place through UNMAS (the United Nations Mine Action Service). The SRSA has also lent its support to the GIHCD (Geneva International Centre for Humanitarian Demining). Key Swedish partners have been the Swedish Defence Research Agency and the Swedish EOD and Demining Centre (SWEDEC).

Spreading across the world

In 2001, the SRSA began a mine action operation in Eritrea. The operation was organised and coordinated on-site, as in Kosovo, by the UN mine action centre. Since then, work has spread across more and more geographical areas. In 2002, mine action operations were carried out in Lebanon and the West Bank. Since 2003, operations have been conducted in Afghanistan, Chad, the Democratic Republic of Congo, Iraq, Russia, Somalia, Sri Lanka, and Sudan.

The three areas that the SRSA worked with in its first operation in Kosovo - information systems and quality assurance of mine dogs and medical care - have continued to be key elements of the work since then.

The IMSMA mine database has developed, thanks in part to the work of Swedish personnel, from an archiving system to a tool for practical use of information.

Close to the source

Mines and unexploded ordnance are currently present in around 70 countries. Every year, around 20,000 people are killed or injured in mine-related incidents. The situation in each country is unique. In some countries, mapping of problem areas has come a long way, and decision makers have a good picture of the scope of the problem. In other countries and areas there is only vague information on the distribution of mines and unexploded ordnance, and the available documentation is poor or non-existent.

"Local collaboration and information gathering is always an important part of the mapping process. We try to get as close as possible to the source," explains Rickard Hartmann.

"In Kosovo, we interviewed the local people and had contact with both armies. We talked to local military officers who had had the responsibility of laying mines, and villagers who had seen

incidents with their own eyes. However, in Sudan, where the war has been going on for 15 years, the situation is much more complex. There we have to put together a jigsaw using information about events over a longer period."
In addition to interviews with local people and soldiers, data comes from hospitals regarding where mine-related injuries happen. The information is compiled in the IMSMA system, where facts and figures including population density, infrastructure and water supply are added. The result is a set of information that is extremely useful in setting priorities for demining operations.

If, following an initial gathering of information and mapping, it is thought that an area may contain mines, the next step is technical mapping. In practice, this means checking whether the area is mined, usually by doing some demining work.

Quality assurance

There are several ways to ensure that demining is carried out in a safe way and thus assure the quality of the operation.

Mine dogs are tested by taking them through a field laid with disarmed mines. They must find all the mines in order to be approved.

Quality assurance of medical care in relation to demining work involves building up entire systems, from the first emergency measures in the field to transport, perhaps by plane or helicopter, to the accident and emergency department of a hospital. The medical care chain is tested on different scenarios — different kinds of mine-related incidents - that could happen as part of the demining process. Every link in the chain and every activity is quality assured.

Attention to safety is fundamental to all demining work. It is absolutely crucial that all personnel are able to keep their levels of concentration high and their attention on the job throughout each working day. Surveys of professional demining personnel show that although the work is risky, attention to safety is nonetheless worthwhile and effective.

DEMINING METHODS

These days, demining often involves a combination of different methods - **mechanical, manual** (mine clearers using metal detectors and mine probes) and **mine dogs** with handlers. The choice of method depends on the circumstances, and the ambition is always to reach the highest possible level of safety and effectiveness.

If equipment for mechanical demining is available, this is often the first measure taken, for example in cases where there is overgrown vegetation and it would be risky and time-consuming for people to enter the area. There are machines with rotating blades, which clear the vegetation and trigger or break mines. Others have a roller that rolls along the ground applying high pressure, triggering any mines they encounter. These machines can be controlled remotely or by a driver who sits on the machine.The driver's cabin is reinforced to ensure the driver is not harmed if a mine explodes.

It is possible that mines or parts of mines may be left in the ground after mechanical demining. That's why a mine dog search is often carried out after mechanical demining. The dogs are trained to recognise the smell of the explosive - often TNT - and they indicate to their handlers when they have located a mine.

Searching with mine dogs is judged to be a safe demining method, and can even be used on its own. However, this method does have its limitations. Environmental factors - such as strong winds or mines containing explosives other than those the dogs have been trained to recognise - can make it difficult for the dogs and their handlers.

Manual demining using metal detectors is probably the dominant method used. Metal detectors indicate where there are metal objects buried in the ground. In areas containing a lot of buried metal, they do emit a large number of signals for objects that are not mines. Nonetheless, every object detected could be a mine, and must be checked with all due caution. Some mines manufactured in recent years contain so little metal that they make it difficult to rely on metal detectors.

One way to combine demining methods is to begin with mechanical demining and then take two mine dogs through the entire area one after another. It is also common to combine manual demining with mine dog searches.

Expanding activities

In recent years, the SRSA's mine action operations have expanded. More operations are carried out and more personnel are involved in this work. Training activities have been extended. The Swedish operations have also widened in their scope and in some ways changed their focus.

The SRSA is increasingly in demand with the UN as a result of its skills in leading, planning and implementing large-scale, complex operations in difficult circumstances. One example is the SRSA's support of UN mine action in Sudan, which includes operational management and logistics operations.

The SRSA has an agreement with the UN to provide resources for rapid response operations for mine action. The first rapid response operation was carried out in 2003. The SRSA was tasked with supporting UNM AS (the United Nations Mine Action Service) in clearing unexploded ordnance and coordinating mineclearing work.

In 2006, at the time of the ceasefire agreement between Israel and Hezbollah in Lebanon, the SRSA's largest operation so far in the area of mines and unexploded ordnance was launched. In the aftermath of the conflict, it was estimated that 1-2 million unexploded cluster bombs had been left in southern Lebanon. Large numbers of unexploded shells were located in agricultural areas, but many were also uncovered in urban areas.

The SRSA's operations in southern Lebanon started on a small scale, but by the summer of 2008 they had grown to encompass five teams with over 90 personnel, around 80 of whom are Lebanese. One of the teams (the Explosive Ordnance Disposal Unit) works with emergency situations. For example, they respond to alarm calls when cluster bombs or other kinds of unexploded ordnance are found. Three larger BAC (Battle Area Clearance) teams work methodically to search for and render harmless cluster bombs dropped over large areas. The fifth team, a mechanical team, has two armoured excavators with crusher buckets, and often works on clearing the rubble of damaged buildings. This team has also provided support for the UN in Lebanon in carrying out demining operations.

"The work in Lebanon has helped the SRSA to develop, primarily because this is our first operation of this size in this area. We have gained a wealth of operational experience, which we have already put to good use in similar operations, for example in the Democratic Republic of Congo," says **Magnus Sedig** at the SRSA Mine Action Section.

"The dogs' potential is without limits"

JOAKIM SVENSSON ANSWERS his mobile in the middle of a Lebanese minefield. Speaking to him gives a remarkable insight into an average day of demining. Later the same day Joakim is still out in the minefield - there has been a detonation and his plans have changed.

Later in the afternoon he gets the first chance to talk. The crackly phone connection cuts out several times, but Joakim's enthusiasm for mine dogs comes across clearly.

"I am often positively surprised by mine dogs. For example, on several occasions I've found that a dog that has only been trained to recognise TNT also recognises other explosive substances," he explains.

"Trained dogs seem to react to things that we humans don't understand. At least 40 percent of the dogs' capacity is as yet unused — we don't know how to tap in to that potential yet."

JOAKIM SVENSSON HAS a background as an army officer and he had already worked with tracker dogs and mine dogs in the armed forces when he was asked to participate in the SRSA's operation in Kosovo in 2000. Since then he has been on many more missions to Bosnia, Croatia, Afghanistan and now Lebanon.

"Dogs can find very small quantities of TNT buried up to a metre deep. We humans have to battle our limitations to be able to learn and understand the dog/'

MINEDOGS

■ Most Swedish mine dogs are Alsati ans or Labradors.
■ A mine dog can search an area of 100 square metres in five minutes
■ A mine dog can sniff out an antipersonnel mine buried up to a metre deep.
■ The training period for a mine dog is about a year, on average.

The basic training of a mine dog is based on TNT. The way it works is that the dog gets to smell a number of cans, one of which contains TNT. When the dog puts its nose into the right can it receives a reward. Then the search becomes more varied and the tasks become more difficult, for example, noticing whether there is a certain quantity of TNT and not just minor scent traces. Most dogs are also trained on other explosives.

"Dogs can find very small quantities of TNT buried up to a metre deep. We humans have to battle our limitations to be able to learn and understand the dog."

TRADITIONALLY, ALSATIANS and Labradors have been used as mine dogs, but in recent years Belgian Shepherd dogs have also been used.

"We have experience of these breeds and we know how they behave. However, we're currently looking at other breeds, such as Jack Russell terriers. One of the qualities we're looking for is a good scenting instinct. It's important that the dog finds the work fun and exciting and has a good internal motor. It must also be a mentally stable dog, so that we don't get handling problems in the field." u A new breed of dog to this context, with a good scenting instinct, could make it possible to cut the time spent training mine dogs, which is currently around 12 months. A smaller breed than the Alsatian or Labrador would also make transport easier and reduce the quantity of dog food consumed.

BOTH MALE DOGS AND BITCHES

are used in mine searches. There are limitations with bitches because they cannot work when on heat, while male dogs can be difficult to work with, as they constantly seek to compete with each other.

People need time to get accustomed to new conditions in a different country, and the same applies to dogs. According to Joakim Svensson, however, dogs are much / better at dealing with this transition than humans — partly because they have the same cage and eat the same food, while humans have to adapt to new circumstances. The most important thing for dogs is to get to know the common scents in the new environment.

The journey home from an operation is much worse for mine dogs — for European dogs at least. A quarantine period awaits them on return, which, although shortened for mine dogs, still involves a long wait. As a result, dogs get bored and lose some of their physical fitness and skills.

Because of these quarantine regulations, European dogs cannot undertake as many operations as dogs from African countries that don't have quarantine regulations. These dogs can travel from operation to operation all over the world.

"The best thing is to train and maintain a dog in the environment in which it works," Svensson says.

THE DOG AND ITS HANDLER are a

team, and if a new handler takes over it takes time for them to get to know each other. They test each other, and often the dog pretends to find a mine every five minutes just to get the reward.

"Dog handlers are also a unique breed. Few jobs are this trying. You have to have full concentration on the dog's every movement. You might not find anything for seven weeks, and then all of a sudden there's one right in front of you. The job demands individuals with great mental stamina."

Not all dogs pass the tests that form part of the quality assurance process, one of which is to find every mine laid out in a test field.

"I see that as proof that the quality assurance process is good. Others try to use this information against the mine dogs, but out of the three main methods - dogs, mechanical and manual - the dog tests are the most well-developed in demining operations."

Although Joakim Svensson doesn't do demining work personally, his work still involves risks.

"When the teams are out at work, I walk behind them to check their work. If they haven't done their job properly then I am at risk," he explains.

"It's a dangerous line of work, and accidents do happen. I've seen civilian victims and the effects on their families."

Joakim Svensson explains that he tries to maintain a professional balance, which sometimes requires the ability to switch his own feelings on and off.

"If I see an accident happen, my reasoning is that the same thing will happen again as long as there are mines left. Things don't get better if I go home - they get worse."

"Often I am met by gratitude and happiness. People often find it hard to believe that we are prepared to sacrifice our lives in Sweden to do this, but for those of us who are in this line of work, it doesn't feel like we are laying down our lives — we are very careful in following instructions."

ROUTINE IS THE BIGGEST DANGER

for everyone who works with mine action. There are clear working methods and procedures, but routine is the main cause of the accidents that do happen.

"I have made a rule with myself not to be in the field for more than a year and a half at a time, both to break up the routine and to maintain contact with my daily life in Sweden. And I have a few key phrases on the inside of my door: 'Stick to the rules. Remember the basics. Don't take any risks.' They remind me of what I'm doing."

The SRSA has a good reputation internationally for its work with mine dogs. Joakim Svensson believes that that is essentially a result of political decisions.

"Sweden and Sida have invested money in mine action and established SWEDEC - the Swedish EOD and Demining Centre. The SRSA has also boosted Swedish mine action."

"Also I believe we have a good tradition of leadership, we're open-minded and we invest a lot in training and preparation. There are not many people out there who work with mine dogs at a management level, who can see the big picture and the best way to achieve a task with the right combination of resources."

"Once I marched straight into a mine field"

I was on my first mission in Basra in southern Iraq in 2003. On one occasion I was charged with the urgent task of detonating a couple of unexploded objects that were slightly burnt and difficult to identify. When they exploded it turned out that one of them was a smoke bomb containing white phosphorous. Phosphorous self-ignites in air and can also ignite objects with which it comes into contact. A piece of phosphorous landed half a metre from my head. I had taken cover at the recommended distance, but in this case that wasn't enough," says Ivo Palm, who has worked with the SRSA on several mine action operations.

He's at home in his apartment in Arsta just outside Stockholm. On the walls, several photographs bear witness to some of the places where he has worked. Unexploded ordnance are spread across the scenes or stacked up in piles. Children play among the forbidding objects. Any movement in this devastated environment could bring mortal danger.

"Of course I was scared when the piece of phosphorous landed so close. I also realised that if I had walked for thirty seconds I would have reached safety, guaranteed. At the same time, the situation throughout the area was extremely unstable. Intermittent shootings and explosions, often around the hotel where we were staying, raised the stress levels significantly," says Ivo Palm.

Basra was also where Palm first came face-to-face with the local population in a war-ravaged area. They are often aware of where mines and unexploded ordnance may be located. This is useful information that can be gathered and processed, and that often requires on-site reconnaissance work.

"ONCE I ACTUALLY marched straight into a minefield. It was when representatives of the local community were going to show us where mines had been laid. We walked together along a well-worn path, and when I asked if we could see the area yet they pointed all around us and said, 'this is the minefield'. We were standing in the middle of it! I won't do anything like that again. That was early on, before I had learned more about the structures surrounding demining work."

Ivo Palm has not taken the opportunity to participate in a debriefing session after coming home from demining operations.

"Training people on location is ideal, as we can test our skills straight away. Sometimes we only have to go round the corner to start demining."

However, he does talk in depth with the people he works with. It's important to listen to each other, to pass on knowledge and to help each other to deal with impressions and experiences.

"Another overwhelming thing happened outside Basra in 2003. Out of nowhere, one of my colleagues was stung by a scorpion. We had to get to the British field hospital beside the airport quickly to get it treated. What we didn't know was that there was a major demonstration underway — thousands of angry people had gathered and started to knock down lampposts to block the road to the airport. We had to stop and we saw the crowds approaching the car. At the last minute we managed to turn and speed off across a field to safety. The people travelling in the cars behind us didn't get away so fast. They were beaten and their cars were smashed up."

Operations in war-torn areas give an insight into the living conditions of the extremely vulnerable. Ivo Palm believes he has gained knowledge he simply would not have gained anywhere else, about himself, his values and his limitations.

"IN SUDAN 1 SAW SOME particularly difficult living conditions. Families with lots of children who lived in cramped conditions with serious diseases. Many of them had nothing, not even clothes. On occasions I realised that a particular child wasn't going to survive much longer, and there wasn't much I could do about it there and then. That can be difficult to deal with.

But in the midst of all this - what we call misery - there is still a vitality, a closeness to joy, that really does test the values and priorities that we take for granted. People living in difficult conditions often have a greater capacity to get the most out of life."

The appreciation from local people is often tangible. The vast majority know exactly what damage mines and unexploded ordnance can do, and many are interested in learning more about them. By cooperating with local organisations, the work is made more effective.

"Since 2003, I've been on six operations. At the start I worked with practical demining, but later missions have been more about building local capacity in this area. Training people on location is ideal, as we can test our skills straight away. Sometimes we only have to go round the corner to start demining."

TRAINING OTHERS DEMANDS flexibility and the ability to listen. The traditional teaching format - standing in front of a group delivering a lecture — simply doesn't work. Pictures and exercises give much clearer information than lectures and books. Using your hands, pointing and demonstrating all help to illustrate.

"It's also important to take the local culture into consideration. Not everyone is used to sitting and listening to one person for a long time. Prayer breaks are not unusual either, and must be included in order for the training session to work."

A major part of the work getting the dialogue between authorities and organisations to work. Sometimes you need a permit to do this kind of work, and it isn't always easy to navigate different countries' administrative systems.

"In Russia in 2005, our trucks were stopped as soon as we arrived in St Petersburg harbour. We were locked up for 24 hours until all the papers and permits were in place. We thought we already had what we needed, but more stamps and signatures were required. In that situation it's easy to be bitter, since we had been invited there to help, but at the same time we did turn up with equipment classified as weapons and that shouldn't be allowed into any country without the proper checks."

AFTER COMPLETING operations in Iraq, Kosovo, Lebanon, Russia, and Somalia, Ivo Palm decided to stay in Sweden for a while and has started to work in the Swedish police force. But his work for the SRSA is not easily forgotten.

"I'd love to go back to all of those places to see how the demining work has progressed, and how training is being passed on, and just to meet up with the people I worked with. Sometimes people get in touch or I hear that someone has been asking after me. It's great when that happens."

THE SRSA'S WORK transporting food and other supplies in the former Yugoslavia in the early 1990s was a lifeline for much of the population there. The people in Sarajevo, Tuzla, and the Muslim enclaves of Srebrenica, Gorazde and Zepa were partly or fully dependent on this aid in order to survive.

Despite the fact that the shipments were often transported through conflict zones, SRSA personnel managed to ensure that the supplies reached their destinations, thanks mostly to the good relations that had been established with both sides of the conflict. As a result, in late 1993 the UN's refugee organisation, the UNHCR, requested help from the SRSA with a new kind of operation: providing housing for refugees in Srebrenica and in the Bosnian Serb areas of Sokolac and Kravica.

"As a result of our work transporting supplies, we had a good grasp of the conditions in all of the enclaves and good relations with the local authorities, which continued to function in spite of the war. We also had good relations with the soldiers positioned at the checkpoints between the zones. It was in the light of this that the UNHCR asked us to begin the reconstruction work, which came to be called the Swedish Shelter Project," explains Roland Nilsson, who was the Head of the SRSA's Fire & Rescue Service Department at the time, which was directly responsible for all international operations carried out by the SRSA.

Extreme poverty

At that time there were five or six times as many people in Srebrenica as there had been before the war. The living conditions were extremely poor, and there was a desperate need for housing before the winter set in. Around 80 percent of the existing buildings had sustained some sort of damage in the war. However, the project hit a number of obstacles. One was that the Bosnian Serb authorities refused to issue entry permits for SRSA personnel. Shipments of equipment were also blocked for long periods.

By June 1994, the new area in Slapovice, on the outskirts of Srebrenica, was finished. It consisted of almost 300 housing units, as well as service buildings that were used as health centres, police stations and distribution points for supplies.

"It was a happy village for as long as it was allowed to last. Srebrenica was meant to be a safe zone, but Bosnian forces invaded in July 1995. Most of the people who lived in those houses are now buried in mass graves under green crosses," says Roland Nilsson.

Around 40 houses and accompanying service buildings were built in Sokolac, and in Kravica a school was converted to a refugee centre.

Projects for Sida and UNHCR

After the fall of Srebrenica, conditions changed for the reconstruction work. The SRSA began several other reconstruction projects. Between 1994 and 1996, the SRSA carried out reconstruction work for Sida in the Tuzla area, and for the UNHCR in eastern Bosnia and the Republika Srpska. Some of the projects were extended until 2003. From 1996 onwards the SRSA also participated in European Commission projects and UNHCR projects for reconstruction in Gorazde, Banja Luka, Sarajevo and Bihac.

"There were successes and failures among the projects. Germany had given money to the UNHCR for reconstruction projects in the hope that Bosnian refugees would return home from Germany, but it became clear that there were not many who wanted to move back home," cites Roland Nilsson as an example of a less successful project.

"It was also tremendously time-consuming to establish ownership rights in terms of the land, and houses that were to be repaired."

Cooperation was problematic

Several of the reconstruction projects were fraught with difficulties, in many cases as a result of poor cooperation between local authorities, the SRSA, and the NGOs. Nonetheless, 10,000 housing units were completed, which became homes for an estimated 50,000 of those made homeless by the war. The Sida project in war-torn villages was the most successful of the projects, and continued until 2003. Roland Nilsson has vivid memories of the reconstruction of war-torn villages in Tuzla, where NGOs

supplemented the construction of housing, schools and medical centres with other support. They provided the inhabitants with crops and fertiliser, carried out demining work, and offered microloans to the people. The combination of operations helped people make a quick return to normal life.

"It is with great joy that I have returned to these areas on later occasions. The people invite us into their homes, offer us coffee and chat with us. We can see that life has returned to these places."

Bridge-building in Angola

In 1996, Swedrelief, the Swedish Armed Forces' special unit for disaster aid, became part of the SRSA. One of the projects that the SRSA took on after this merger was the construction of bridges in Angola. Roland Nilsson was there.

"Just like in Bosnia, it was important for me as a manager to be able to instigate good relations with people. I remember one occasion when I went to negotiate with a rebel leader, to ensure that the rebels didn't destroy the bridges as soon as they were finished," recalls Roland Nilsson.

"I was invited to a round hut where their council was held, to meet with the warlords. There was one man with an impressive air of dignity. In a meeting like that, you have to choose your path carefully and cautiously. You have to be able to exchange words, but you also have to take the time to smoke and drink and be silent."

Roland Nilsson was struck by how similar people are in different parts of the world, and how everyday life continues, even in the context of a civil war, as in Angola.

"We were in a little village in Angola, when five boys dressed in white shirts appeared on bikes. They washed their shirts and trousers in the river, and then had a swim. By the time they came out of the water, their clothes were dry. We asked them where they were going, and they said they were going to meet some girls and go to a dance. It struck me that things there weren't so very different from life in Sweden."

All the bridge construction work in Angola took place with the help of personnel hired locally. They did the job well, but as a representative of the SRSA, Roland Nils-son was acutely aware of some shortcomings in health and safety.

"Health and safety is not less important for locally hired people than for Swedish personnel - actually the opposite is true. If a Swedish worker were to break a finger during an operation, he or she would travel home and receive care. For an Angolan worker, a broken finger would be a catastrophe as an entire family would lose their source of income."

On the country's own terms

Roland Nilsson summarises his experience of reconstruction work by saying that it's difficult, time-consuming, and demands a completely different kind of carefulness compared to fast-paced relief operations in the aftermath of a disaster.

"We're used to coming in to emergency situations, where chaos reigns and everything happens at a feverish pace, and carrying out dynamic, large-scale operations at high speed. Reconstruction work, on the other hand, has to be on the country's own terms and respond to their requirements. It's not just a matter of turning up and knocking up some quick buildings."

The reconstruction work in Yugoslavia was followed up. Shortcomings were evaluated and supplementary work was required for buildings that had not been completed on time. Financial disputes arose that damaged the SRSA's relations with the UNHCR. As a result of these problems, the Swedish government decided that the SRSA should no longer take on reconstruction work.

A breach in the trust

"The part about 'early reconstruction' was deleted from our budget document in the year 2000, and there was nothing we could do about it," says Kjell Larsson, who was made Head of the SRSA's International Department, when it was formed, in 1999.

"This ended up causing problems for us. Put simply, we were forced to back out of aid work in difficult situations whenever the focus started to move towards any kind of reconstruction work," explains Kjell Larsson.

The SRSA completed reconstruction operations in Honduras, Angola, Bosnia and Mozambique, in accordance with contracts that had already been signed. In 2003, the SRSA got the green light to begin doing early reconstruction work again.

In terms of reconstruction work, people's trust in us had been breached, and we're still working on regaining that trust," says Kjell Larsson.

"What we learned from the reconstruction work in Bosnia was how complicated these kinds of operations can be. It's not easy to build a house in Sweden today, in terms of coordinating logistics and construction workers, and in Bosnia we were trying to do the same thing in a war zone, which doesn't make it any easier.

We're not a construction authority, but we can try to develop this capacity by bringing in those who have the appropriate skills. At the moment, for example, we're working with the Swedish National Road Administration and the Swedish National Rail Administration on bridge construction projects."

Other skills are needed

When undertaking reconstruction projects, in addition to technical skills, there is also a need for detailed knowledge of international development cooperation, on an entirely different level to what is required for disaster relief work.

"These days we say no to a lot of requests for reconstruction operations. We are putting the brakes on to ensure that we are able to maintain high quality in the work we do undertake."

Many of the reconstruction operations that the SRSA has been involved in recently are somewhere on a spectrum between late disaster relief and reconstruction work. Examples include restoring the airport in Beirut back to working order and repairing a sewage treatment plant that was destroyed when Israeli troops invaded Lebanon in 2006.

New homes for refugees

"If you're going to work in this kind of environment you have to realise that you can't help everyone. You do the best you can within the confines of the mission. Sometimes the mission acts as a shield."

FIFTEEN YEARS HAVE passed since Lars Fornell was in the midst of the tension and violence of the raging conflict in the former Yugoslavia, yet he describes it like it was yesterday. Their UN mission - the largest Swedish humanitarian aid project during the war — was to build houses for almost 3000 refugees in the besieged enclave of Srebrenica, which would later be ravaged.

"The enclave of Srebrenica was a demilitarised zone under UN protection, but during the time we were building, the area was under fire from the Serbs every single day. The rules were violated around 250 times a day," recounts Lars Fornell, who was Project Coordinator for the SRSA's construction work in Bosnia-Herzegovina from 1993 to 2003. A total of 11,000 houses, schools, hospitals, care homes, roads and bridges were rebuilt or repaired, at a cost of SEK560 million. The SRSA provided the equipment and construction management. The local people did the hard work.

THE PROJECT IN SREBRENICA has left its mark on electrical engineer Lars Fornell. He now works on shelter room development with the SRSA in Karlstad, and he plans to retire soon. In 1993, he and a handful of colleagues were sent to the former Yugoslavia on a reconnaissance operation. Was it possible to provide aid in the form of construction and repair work, as the UN had requested?

"We judged, perhaps naively, that it would be possible," says Lars and goes on to talk about bombed-out flight terminals and dramatic journeys in bullet-proof vests and helmets, all played out against a background of constant gunfire and the rumble of warfare.

On his first visit to Srebrenica, the scenes he saw reminded him of a concentration camp - people in torn clothes, living in ruins. There was no electricity, no water, and no communication with the

outside world. The Serbs controlled all entry and exit to the area. The levels of degradation and desperate need made a powerful impression, particularly the empty gazes of children.

"In other war zones, children still play, but the children in Srebrenica didn't play. I saw how the Serbs shot at women, aiming for the hip joint, to shatter the pelvis."

He explains that if you are going to work in this kind of environment you have to realise that you can't help everyone.

"You do the best you can within the confines of the mission. Sometimes the mission acts as a shield. Many of those who wanted to help more than they could found the mission difficult mentally and emotionally."

Lars Fornell was responsible for transportation, including the enormous amount of paperwork that had to be done in order to gain permits to bring supplies into the country. The UN sanctions committee had to have their say, and the Serbs had to approve "every last nut and bolt". No less than 270 railway freight cars traveled from Trelleborg in southern Sweden to Belgrade, loaded with prefab houses. From there, 600 truck convoys left for Srebrenica, about a dozen at a time. By July 1995 the houses were complete, just outside the city.

"We managed to pipe water from the mountains for the residents, and we built a school," says Lars, who maintains that not only the housing, but also the international presence, were crucial for the people in this locked enclave. "It was a way of showing the world that they existed."

THE TRAGIC SEQUEL to this Story has been well documented. In the summer of 1995, the Serbs entered Srebrenica and killed at least 7000 men. The women and children were taken away. Only after the Dayton peace agreement in 1996 was it possible for the SRSA to continue their projects. The houses in Srebrenica were taken over by Serbs, who then moved them to other locations.

Working in Bosnia-Herzegovina has made Lars Fornell more tolerant and has earned him lots of new friends - Serbs, Bosnians and Croatians. And the most important lessons learned? He says that better knowledge of the culture would have helped, although his own group managed to avoid some cultural clashes by seeing themselves as guests in a foreign country.

After returning home, it's crucial to discuss the experience. Lars Fornell talked with the group of 28 Swedes who had been in Srebrenica together.

"I also think it's extremely important to throw yourself back into everyday life once you get…

Building bridges on local terms

"We stayed with Afghan people in rural areas, slept in their houses, ate their food, went to the market and bought freshly slaughtered sheep. Experiences like that stay with you."

He has been to Angola, Lesotho and Zimbabwe to lay roads using a pickaxe, spade and wheelbarrow, with hundreds of locals. He has taught technology at the Swedish Military Academy, and has a background in the Swedish Army Engineers. So retired Lieutenant Colonel Lars Pihl was the ideal man for the job of teaching the Afghans to build bridges. However, his work with the SRSA in Afghanistan in 2003 had some unwelcome surprises in store.

With the help of local workers, the team had three months to replace three river crossings on the road that leads from the capital city, Kabul, to Uzbekistan. The route is a crucial economic artery. HGVs use it daily to transport steel and diesel. The original bridges were blown up during the civil war of the early 1990s, and had been replaced by narrow Russian military bridges, built on moorings made from old tank chassis.

"WHEN TRUCKS DROVE over those bridges, their tyres were almost over the edge. On Fridays there were terrible bottlenecks in both directions. The traffic was horrendous and we were meant to be working in the midst of it all."

On top of all that, none of the information from the pilot study was accurate.

"You just have to accept the situation and improvise a solution, not just sit and wait," says Lars Pihl, team leader for the five Swedes who were on site to carry out the mission.

THEY HAD TO START with Some creative thinking.

The moorings that were meant to be waiting for them were nowhere to be seen. The temperature was 35 °C and so it was impossible to sleep in the storage tent they had brought with them. Dust, drought and lack of electricity caused major difficulties. The local workers assigned to the task had no experience of this kind of work. "Every single morning we had to teach them the same methods all over again."

Despite everything, the workforce finally managed to construct the three bridges. The new crossings were wide enough for two-way traffic and that made a major difference. What's more, the satisfaction of completing the job on time and sharing the conditions of the local people really whet the group's appetites.

The support from the locals was wholehearted. The Swedish group was popular, since they offered work to people who had never had jobs.

"It's the little guys who you come into contact with, the ones who carry the nuts and bolts, not the men in suits. We stayed with Afghan people in rural areas, slept in their houses, ate their food, went to the market and bought freshly slaughtered sheep. Experiences like that stay with you. Swedes in Afghanistan with their military units never get that close to the people."

LARS PIHL SAYS HE WAS surprised that there is so much conflict in a country populated by such gentle, hospitable people. His attitude to Muslims and Islam has changed, as has his view of the USA. He calls the behaviour of American soldiers "deplorable", and he is afraid that their attempts to subdue the Afghan people are more likely to benefit the Taliban than to tackle terrorism.

The lessons learned in Afghanistan - like checking that the reconnaissance team is there when the job is to be done, and that the team are familiar with the materials - have been put to good use in new projects in Sri Lanka.

AFTER THE TSUNAMI, emergency supplies soon ran out. Sweden then sent 80 freight containers to Sri Lanka containing enough material to construct 15 military bridges that would otherwise have been scrapped. Lars Pihl and his colleagues then travelled to Sri Lanka to teach the local people the necessary construction techniques.

"There are not many countries that could travel to disaster areas at such short notice and construct sound bridges from old materials. The construction part takes a lot of work, but the materials remain robust and solid."

AFTER THE FALL OF THE SOVIET UNION and the Baltic states' transition to independence, Sweden earmarked funding to help strengthen these young states - called sovereignty support. The aim of this funding was to promote safety and stability in the Baltic region.

The rescue services in Estonia, Latvia and Lithuania lacked both resources and training. The structure and organisation of the rescue services and of safety issues in general were unclear. At the same time, Sweden had unused surplus equipment as a result of the restructuring of the Swedish Civil Defence League, which could be put to good use in these new neighbouring countries.

In the early 1990s, the SRSA initiated its first four-year programme of equipment support and basic rescue service training
for the Baltic states. This was followed by several more four-year programmes for capacity building, which was a new area of work for the SRSA. The aim of these programmes was to increase the recipient countries' capacity to handle crises and disasters independently. Support for Estonia began in 1992, and the following year, cooperation with Latvia and Lithuania also got underway.

"When we arrived in the Baltic region at first, everything seemed grey and in disrepair. But soon we discovered the incredible determination and strength of the people. In my working life I've learnt more from my colleagues to the east than from my Swedish workmates," says **Anneli Bodin** at the SRSA in Karlstad.

Anneli Bodin worked as Information Officer at the SRSA at the time and was tasked with documenting the operation, and her responsibility was later extended when she was made coordinator for the four-year programmes.

Roland Nilsson, who was the head of the SRSA's Fire and Rescue Service Department at the time, recalls the gratitude of their Baltic colleagues:

"To begin with, they were simply overwhelmed to receive aid of any kind. As a result, it took a while before we could figure out what they really needed and wanted."

It turned out that the SRSA already had some employees with roots in the Baltic region, who had good contacts in their home countries.

"They were invaluable, not only in terms of linguistic abilities. They had communication channels that led all the way to government level in the Baltic states, and they could also help us communicate with ordinary people. That really facilitated our cooperation programmes, not least because we found out straight away when we were barking up the wrong tree," explains An-neli Bodin.

The development cooperation programmes were evaluated every year. That was also the time for discussions on changing priorities for the coming year.

The capacity building work mainly took the form of training in various different areas. Courses were held for different target groups, both in Sweden and in the Baltic states. Every year between 1992 and 2004, around 60 incident commanders were trained in emergency management, collaboration and coordination. In addition, 75 specialists were trained in smoke diving, maintenance of equipment, tactics, or operations relating to chemical incidents and water rescue. Special oil protection projects, including equipment and training, were held in all the major harbours on the Baltic Sea coast. In order to ensure the safety programmes were firmly established, risk management courses were held for politicians and senior civil servants at local level. "We got important feedback thanks to the good contacts we had. We Swedish people tend not to be particularly humble, and it's easy for us to think that we know everything and others should learn how we do things. We got a bit of cultural rap on the knuckles when the course participants from the Baltic countries told us they didn't appreciate that attitude. That was an important lesson for us to take on board," says Anneli Bodin.

Making cooperation bilateral

The overall goal of the capacity building operations in the Baltic countries was to reach a normal level of cooperation for neighbouring countries. From a Swedish perspective, this meant a level comparable to our cooperation with the other rescue services in the Nordic region. At the time of the Baltic states' entry into the EU, these aid operations were judged to be complete and since then cooperation has continued on the basis of bilateral agreements, in which we agree to support each other in the event of major incidents and in joint development projects.

"These days we have mutual cooperation based on cooperation agreements for the countries around the Baltic Sea. The Baltic rescue services have developed fast, and our relations have changed from giving basic support to exchanging expert knowledge," Anneli Bodin highlights.

At the moment, the rescue services in Sweden and Estonia are providing joint support to Armenia, with the aim of building the country's capacity to deal with fire and rescue work.. From having been a recipient of aid, Estonia is now a donor country. "During the flooding in Poland in 1997, the SRSA sent pumps from Sweden. The Lithuanian rescue service was then able to provide training on how to use the pumps. After all, they had the same equipment, which they had received from us," explains Anneli Bodin, as another example of how cooperation works across the Baltic Sea.

A new mandate for the SRSA

In 2004, the same year that Sweden stopped sending aid to the Baltic region, the SRSA was given a mandate to work with capacity building in other countries beyond the Baltic states.

It's all about supporting the countries with which we cooperate in their own disaster and emergency management," explains **Hazme Akyol,** who is the Head of the SRSA's Capacity Building and Recovery Section.

"This new mandate required some adjustments for the SRSA. One of the necessary changes has been recruiting new types of personnel to our personnel pool," she continues.

Hazme Akyol used to work for the UN World Food Programme, and as a new employee at the SRSA, she was given responsibility for capacity building support in Pakistan. The aim of the project

is to strengthen Pakistan's own capacity to carry out search and rescue operations, with the major earthquake in Kashmir in 2005 fresh in the memory. The INSARAG Network analysed the country's needs and concluded that they needed at least two search and rescue teams.

The cooperation project in Pakistan is unique in several ways, not least because several donor countries are participating in the same project. Many countries wanted to support Pakistan after the earthquake, and instead of running its own project, the SRSA chose to work together with development assistance agencies from Switzerland and the UK. That has brought the opportunity to benefit from each donor country's set of skills.

"The aim of the project is also unique. Previously, similar projects have sought to build up teams that have the capacity to carry out the initial search and rescue work after an earthquake, known as the first response. We are now establishing search and rescue teams that can cope with all kinds of tasks, like transporting building equipment and cutting concrete. These teams are what INSARAG calls USAR teams - short for Urban Search and Rescue," explains Hazme Akyol.

The SRSA has overall responsibility for coordination of the operations. The British group has advanced technical skills, for example in how to support rubble during rescue work, and the Swiss agency runs training in searching with dogs.

"We at the SRSA have learnt a great deal through this project. We get the chance to apply Swedish knowledge in an international context, while also developing our own skills."

Hazme Akyol has carried out work in Pakistan on several occasions, and she says it is an amazing feeling to see plans transformed into reality. Training programmes get going, offices are established and people start to work.

"The results of our work are knowledge, experience and structures that save lives. I heard via the BBC about a major rail traffic accident in Pakistan, where the rescue services did not have the equipment to cut people out from the wreckage of the train. My first thought was that we are providing this equipment for the teams. The work we do can be put to good use in many ways."

Her experiences of being a woman in a position of leadership in a Muslim country have been mostly positive.

"There is a tendency among the people I meet to look over my head and try to carry on a conversation with the men in the group instead, even if the matter being discussed is my area of responsibility. In those situations, however, the men always back me up and refer the discussion to me. It's also important to have a clear mandate and not to deviate from that," she emphasises.

Expansion of work areas

Since 2004, the SRSA has been involved in several capacity building projects. The areas of work are being expanded and several operations now have a clear environmental aspect. Since the tsunami, the UN Environment Programme (UNEP) has wbeen running a project to build India and Thailand's capacity to respond to similar disasters, on several levels. The SRSA is involved in this project, with a focus on risk assessments, preparedness plans and training exercises. Other examples of similar programmes include supporting Ukraine's emergency and disaster preparedness, and improving disaster waste management in Mexico.

DISASTER RISK REDUCTION

Since the tsunami disaster, there has been a greater international focus on preventing disasters and their consequences. Despite a long-standing awareness of the importance of preventive work, for many years it has taken a back seat to humanitarian operations in acute disaster situations.

At the UN World Conference on Disaster Reduction in Kobe, Japan held in January 2005 - one month after the tsunami - the world was united on joining forces to reduce the risk of disasters and their consequences. In the international declaration adopted by the UN General Assembly, this work was given the official title of **Disaster Risk Reduction.**

EXAMPLES

There are many examples of disaster prevention work, like placing new housing in areas that are not at risk of flooding, or improving the safety of dams. Other examples include choosing sound construction techniques within earthquake risk zones, or developing procedures for the transport of dangerous goods.

ANALYSIS AND PREPAREDNESS

The cornerstones of Disaster Risk Reduction are risk analysis, risk reduction, and strengthening preparedness. Risk analyses help governments and organisations to survey and assess the risk of future disasters. Risk reduction covers the measures taken to reduce the likelihood that disasters will occur and/or alleviate their consequences. Strengthening preparedness involves taking action before a disaster with the aim of increasing the effectiveness of individuals, organisations and society in disaster management.

SRSA'S FOCUS

Through its work in Sweden, the SRSA has a long tradition of preventive work and building preparedness for operations in the context of various kinds of disasters and emergencies.This focus has become part of the SRSA's international operations.

"One example is the cholera epidemic that broke out in a refugee camp in Goma, Zaire, where many refugees died of cholera every night. The SRSA analysed the situation and realised that shortcomings in water and sanitation management were behind the epidemic. When the refugee camp was provided with latrines, the epidemic disappeared," explains Per Becker from the SRSA's Strategic Support Unit.

Sweden was one of the first countries to ratify the UN Guidelines for Disaster Risk Reduction in January 2005. The same year, the SRSA also received a government mandate to work on capacity building for disaster management.

CAPACITY BUILDING

"The capacity building operations we carry out at the moment, in countries like Armenia and Tajikistan, are examples of how we do Disaster Risk Reduction. Other examples include our participation in the work to create an early warning system for tsunamis."

Capacity building for disaster management demands work on several levels - from material resources and skills development to organisational development, coordination and legal frameworks.

"This kind of work demands broad cooperation between government authorities and organisations. Take the storm'Gudrun', for example. One of the worst consequences of the storm was the series of power cuts. The power companies were responsible for restoring the electricity supply, and their work was made more difficult because the roads were impassable. That in turn was the responsibility of the Swedish Road Administration."

A cutting-edge rescue service

'There was enormous interest in learning new skills. Many of those who participated in the training programmes were outside Estonia for the first time, and had a chance to see how we live and work here."

HANS KUUSK HELPED TO establish a new emergency services agency in Estonia after the country gained independence in 1991. Now, he's more than a little surprised that it was possible to create a cutting edge fire 6c rescue service in just 10 years.

"When we began to cooperate in 1992, the whole organisation was obsolete. It was extremely hierarchical and based on a passive and militarised culture. Several of the senior staff members we met couldn't handle the changes - they were still stuck in the past," recalls Hans Kuusk, who has been Head of the Technical Department at the SRSA College in Skovde for years. v Much of the equipment was obsolete too. Protective masks and other protective equipment could be more than 30 years old. Most of the equipment was designed for war use. The tank trucks could be converted missile carriers or other military vehicles.

"The machines really weren't suited to civil society. They were heavy, unwieldy and hard to manoeuvre. They were also very poor from an environmental point of view," explains Hans Kuusk.

OPERATIONS QUICKLY BECAME more effective once equipment began to be replaced. In Sweden there was a surplus of civil defence equipment, which was sent over to Estonia and put to good use. Hans Kuusk saw some of the equipment in use when his Estonian counterparts were tackling a forest fire outside Tallinn.

"Although the equipment from Sweden was quite old and used, it was ideal for use in the transitional period, before management and administration systems had been established," he recalls.

FROM THE VERY BEGINNING, there was a great interest in development and learning new skills. Training programmes were launched in both Estonia and Sweden. Most of the participants were between 20 and 30 years old. Soon, a new generation began to take over, changing the old structures as they went.

"There was enormous interest in learning new skills. Many of those who participated in the training programmes were outside Estonia for the first time, and had a chance to see how we live and work here in Sweden. Then they took that which they found useful and developed it at home," recounts Hans Kuusk.

A total of 200 officers, instructors and specialists from the Estonian fire & rescue service participated in training programmes run by the SRSA. In cooperation with the Finnish fire & rescue service, a new training course was established at the Vaike-Maarja Fire & Rescue College.

"Part of the programme focused on making training exercises more environmentally friendly. They started to burn natural gas, instead of car tyres and other waste that caused terrible pollution, in order to reduce the environmental impact," explains Hans Kuusk.

THE LAST ELEMENT of the capacity building work that he participated in focused on helping management to draw up strategies for the future of the organisation. His most recent visit to Estonia was in 2006, when he could see that the capacity building project had been a great success.

"There are now modern fire 8c rescue stations created more or less from scratch, with well-trained personnel and advanced equipment. It is fantastic to see that it was possible to implement such major changes in such a short space of time," concludes Hans Kuusk.

Mitigating consequences

NATURAL DISASTERS CAN lay waste to large areas in a short time. However, they can also create new problems that can damage the environment in the longer term.

The major flooding in Mexico in late 2007 affected 60 percent of the state of Tab as co. The majority of buildings was partly or fully waterlogged, and after the waters had receded it was clear that the water damage was extensive. People returned to their homes and cleared them out. Furniture, building equipment, hazardous waste, electronics and other waste was all thrown out onto the street and taken to the dump without being sorted.

After the flooding, the authorities had problems with the large amount of hazardous waste that was discarded along with household waste.

"When the waste has already been taken to the dump, it's hard to instigate good waste management," says Ingrid Hastad, an environment and waste consultant who specialises in waste management in disaster situations.

WHEN THE LOCAL AUTHORITIES in Tabasco asked for help from Sweden to improve their capacity to prevent similar waste crises in the future, the SRSA called in several consultants, including Ingrid Hastad.

"There are a lot of organisations that offer immediate aid after a disaster, but there are fewer that work to prevent and mitigate the consequences of a disaster. That's why this project was so interesting," explains Ingrid Hastad.

"Our aim was to investigate what the authorities had already done, and what sort of planning and preparedness they had in place for similar situations in the future. One example is ensuring that hazardous waste is not mixed with other disaster waste. We also looked at how to avoid flooding in the future. In Tabasco and the neighbouring state of Chiapas, for example, there had been a lot of deforestation, and there was not enough vegetation to absorb large amounts of rainwater.

In poor countries, it is common for people to survive by searching for reusable items on rubbish dumps. In Mexico they are known as pepenadores.

"YOU COULD SEE THEM all over the place, wherever there was waste around the bin bags on the street, in bins, skips and on dumps. The situation brings up a lot of ethical issues. On one hand, these people are being exposed to major health risks. On the other hand, safer waste management would deny them their source of income."

In order to develop the capacity for good disaster waste management, it is important that the authorities work together. In Tabasco, the civil defence force has overall responsibility for disaster preparedness. However, it is difficult to establish a good system for emergency situations if the standard waste management system doesn't work.

"If the waste management system doesn't work smoothly under normal conditions, the chances of it working in a disaster situation are not high", explains Ingrid Hastad.

"There are a lot of organisations that offer immediate aid after a disaster, but there are fewer that work to prevent and mitigate the consequences of a disaster:'

ENVIRONMENT AND DISASTERS

Environmental emergencies can be the direct cause of a disaster situation, as with major chemical spills. In other cases, environmental threats come about as a result of natural disasters or war. Examples include polluted drinking water as a result of flooding, or the huge amounts of waste that result from earthquakes.

For several years now, the SRSA's disaster operations have included an environmental dimension. One early example was an operation carried out in Venezuela in late 1999 and early 2000. A landslide had occurred in the area around the capital, Caracas, as a result of rain and flooding.

In a port north of the city, chemicals were stored in a storage unit that had been damaged by the landslide, and it was feared that toxic gases were being released. The SRSA sent two experts to the area and they were able to resolve the situation.

COOPERATION WITH UN

At an international level, cooperation has been developed between OCHA (the UN Office for the Coordination of Humanitarian Affairs) and UNEP (the United Nations Environment Programme), in the form of a joint unit for environmental disasters. The SRSA has contributed to their work in several ways, such as by sending environmental experts to assess the environmental effects of a natural disaster. As well as these operations, which may arise at short notice following a request for help, the SRSA can also make an emergency team available in situations where there is a risk of future disasters with environmental implications. This has happened, for example, in the run up to the hurricane season in Central America and the Caribbean.

CONFLICTS

The SRSA also works on environmental problems in the aftermath of long-term conflicts and natural disasters. Examples of this include Pakistan and Lebanon, where the SRSA has worked to develop ways of recycling materials from destroyed buildings. Other SRSA operations have also included an element of post-disaster waste management. This is an important shortterm issue, since some waste can be life threatening, such as hazardous waste from hospitals. However, it is just as important in the long term, since soil, air and water can be polluted by substances released from waste. Also, if construction waste and rubble is recycled, there is less need to consume more of the earth's natural resources in the reconstruction of buildings.

IMPACT ANALYSIS

The other dimension of the SRSA's environmental work is monitoring the environmental side of all

our operations to ensure they do not have a negative impact on the environment. The development of a new base camp concept has been something of a pilot project in this area. Environmental issues are raised in operational personnel training, and the code of conduct for operational personnel is being reviewed to include environmental aspects.

CLIMATE CHANGE

Climate change is a huge challenge for all who work with humanitarian aid. Global warming is expected to lead to more frequent and more powerful hurricanes, more flooding in parts of the world and more severe droughts in other parts. If this causes a lack of drinking water and arable land, environmental resources could also become a source of conflict. An important future activity for the SRSA and its partners will be to identify measures and methods that can bring long-term benefits in managing the risks that follow in the footsteps of climate change.

THE YEAR 2008 MARKS the 20th anniversary of the SRSA's first international operation. However, it is also the last year that the SRSA will exist as an independent agency. On the last day of 2008 the SRSA along with the Swedish Emergency Management Agency and the National Board of Psychological Defence will all be dissolved. Parts of all three will be absorbed on I January 2009 into the new Swedish Civil Contingencies Agency. Kjell Larsson, Head of the International Department at the SRSA, shares his perspective on this change and other future issues.

How will the creation of the new agency affect international work?

"From the guidance issued, it seems that all the tasks of the International Department will continue. There are lots of advantages of the new joint agency - primarily a broader skills base. We will get to work with the big picture, instead of just parts of it. The divisions that exist at the moment have often seemed unnatural, mainly in relation to the Swedish Emergency Management Agency. Also, our work in Sweden is to be concentrated in fewer locations. Naturally, this affects us."

The International Department of the SRSA has grown quickly in recent years. Does the organisation have growing pains?

"It is true that we have expanded quickly, mostly since April 2006 when our base moved to Kristinehamn. The government usually has quite a hands-on approach with the agencies, but in our international work we have only had a few instructions and appropriation directions to go on. The government asked us to review a strategy for the first time this year. Until now we have just tried to progress through trial and error."

"In the immediate future we are going to stabilise our structure and find the right level for us. We are also going to try to be better at being a learning organisation. It's important to learn from mistakes and take a good long look in the mirror. We have something of a 'blue light mentality'. We are available, we get the call and we respond rapidly. It's charming and effective, but the other side of the coin is that we have problems with analysis, feedback and organisational learning.

The SRSA's first international operations were all about rapid response to emergency situations. Its work has now grown to include mine action, recovery and capacity building. What will the organisation look like in the future?

"Our core and our legitimacy lie in rapid response humanitarian relief operations. That is the foundation on which we base our work. We put out fires, or at least stop them from spreading. This is where our skills are, and that's why the U and the EU request our services, even though the disasters in question are often far from Sweden. To put it in Swedish terms, its as though there's a fire in Kristinehamn and the local fire service needs help, and requests it from a distant place like Sundsvall instead of from nearby towns like Karlstad or Karlskoga. That's why we also do capacity building, to support countries that want to help each other and themselves. It's a good development that has plenty of support from the international community. We will also be carrying out recovery work to a certain extent, and we'll continue with mine action, which is an important element of our work."

Is the development moving towards more, smaller operations, in terms of number of personnel?

"1' d say that it goes in cycles. Today, as in the year 2000, we are involved in many operations to which we send experts or small teams. In 200I, however, the global picture changed after the attack

on the World Trade Center in New York. We also carried out major operations after the tsunami in 2004, and in transporting Swedish residents home from Lebanon in 2006. It's impossible to predict what's going to happen."

The SRSA has been able to use Swedish military surplus equipment in many operations. But how long will that last?

"We have had a favourable position in the sense that we have been able to take over surplus equipment from the Swedish armed forces at a low price or free of charge, and we have been able to carry out a multitude of good operations as a result. However, there is not very much left that is in a usable state. By the year 20n we should have a new system in place, by which we purchase the items we need instead."

What is the role of the SRSA as regards gender issues?

"We have set up a goal that at least 40 percent of our personnel in the field should be women. At the moment that figure is at 20 percent, but it's important to remember that when we started working with gender issues, it was only 4 percent, and almost all the women were nurses."

"Gender issues are crucial to the quality of our operations. You can't save the population of a country if you exclude the women. And in Iran, for example, it may be extremely dangerous for a woman to have direct contact with a foreign man. There is no way to come into contact with women unless you yourself are female. The internal atmosphere is also better when there is a more even gender balance."

"We also plan to continue to carry out preventive work. Our Code of Conduct supports this - it is signed by me and by all personnel who go on an operation. It states that no sexual relations may take place during operations. We have this approach because we are aware that people in poor countries may be in a position of dependence on us."

The SRSA also plans to develop its work on other diversity issues, such as disability and ethnicity. How will that work take shape?

"This too is all about the quality of our operations. We want to ensure that what we do really works in the cultural context in which we find ourselves, and that it helps the people who need help. So we can't send out someone who is good at mending cars or electric wiring if they can't handle cultural differences in a sensible way. In terms of disabilities, there is often a focus on people with sight or mobility-related disabilities, but I would like to raise awareness of the situation for people with mental health problems, as they are often regarded as pariahs among pariahs.

What is your view of safety for UN personnel following the bomb in Baghdad in 2003, where it became clear that the UN flag is no guarantee for safety?

"The SRSA had established a base camp inside the UN compound in Canal Hotel in Baghdad, where the UN had its headquarters. A truck loaded with explosives drove into the building. Around 50 UN workers were killed and many were injured. The SRSA team used its base camp to gather and care for the wounded. The result of the attack was that the UN withdrew from Iraq, and we did the same."

"Personally, I don't see the bomb in Baghdad as a major eye-opener. Our operations in Bosnia were carried out in circumstances that were at least as dangerous as those in Iraq. These days, we would not allow our personnel to be exposed to the kind of risks the," faced in Bosnia. We have more stringent requirements now, so I suppose we have gone through a learning process after all. But many of our operations are dangerous nonetheless, in situations plagued by a seemingly inexhaustible supply of weapons, conflict, bandits and drugs - factors that we cannot influence."

Is there any other future issue you'd like to bring up?

"One problem that we're on our way to solving is the support team for the rescue of Swedish residents abroad, which previously had unclear guidelines. I think the proposals that the commission has drawn up are good, suggesting that in exceptional emergency situations involving many Swedish residents, the government should evacuate them."

An active agency with a focus on results

"We didn't want to be a distant, hands-off agency that didn't know how day-to-day

operations worked.
WHEN THE SRSA was founded in 1986, its vision was clear: to become an agency that was firmly anchored in local fire and rescue brigades. An organisation that was about action and that delivered results. The way was paved by the first Director General, Lennart Myhlback.
"We didn't want to be a distant, hands-off agency that didn't know how day-to-day operations worked. We wanted the fire service to play an important part, and the international work, where we used firefighters and fire brigade sub-officers, was a way of reaching that goal," he explains.
Lennart Myhlback enjoys telling the story of the early years of the SRSA. As in any organisation, certain areas of work had to be prioritised, and one of the decisions made at the beginning was not to conduct international work. At least not until the agency had built up enough skills and experience.

LENNART MYHLBACK TOOK UP the position of Director General after almost 20 years working for the government. He came from a position as Secretary of State at the Ministry ofJustice. After many years of commuting between Uppsala and Stockholm, the chance to return to the Viirmland region was much appreciated.
IN DECEMBER 1988, there was a major earthquake in Armenia, and for the first time the Soviet Union requested international assistance in the aftermath of a disaster.
"On that very day we were at a conference for the SRSA managers, and around lunchtime I got a call from the government, asking if there was any assistance we could offer. I called some of the managers together and we came to the conclusion that we had plenty to offer - equipment from the civil defence stores, rescue dogs trained to search through rubble, and dedicated firefighters," recalls Lennart Myhlback.
"Around 3 or 4 that afternoon I was able to explain to the government exactly what we had to offer, and between 8 and 9 that evening we got the green light to carry out an operation."

LENNART MYHLBACK LED parts of the operation himself. Equipment was gathered from stores, and passports and vaccinations were organised at record speed.
"I knew that we had highly skilled personnel who would be able to get the job done, and that they were aware of safety issues. This operation garnered a lot of attention in Sweden at the time, and afterwards the evaluation showed that it had gone extremely well. After that, it wasn't long before the other superpower, the USA, needed assistance when the Exxon Valdes oil tanker ran aground off the Alaskan coast. So the SRSA and the Swedish Coast Guard flew over some equipment and an instructor."

DURING THE GULF WAR in the early 1990S, many Kurdish people left their homes and took refuge in the mountains. The SRSA sent equipment, built camps and organised water and transportation for them.
"After that operation I had a lunch at the Ministry for Foreign Affairs, and I got talking to the UN Refugee Chief for Europe. She had observed that we had done a good job with the internally displaced persons in Turkey, and asked if we would be able to transport food and supplies in Croatia and Serbia. 'Sure we can,' 1 replied, thinking that if our work had been successful in the mountains of Turkey then surely we could manage the same thing in Europe."
Soon after, the government gave the SRSA the go ahead for operations in the former Yugoslavia. Initially, the purpose of the operation was to transport supplies in Croatia and Serbia, but the conditions quickly changed.
"An air bridge had been established between Zagreb and Sarajevo, and it was our job to drive supplies from the airport in Sarajevo to their destination. We took twelve vehicles down there, and for the sake of safety we only sent six at a time into the city. I joined the convoy on one occasion. It was quite an experience to work with gunfire all around, but if we were going to send people out on a mission like that, I wanted to see the situation for myself"
"At the same time, we also provided support to the fire and rescue services in Estonia, Latvia and

Lithuania. We also helped construct refugee camps and water purification systems in Rwanda. We managed all of this with a very small central organisation, and it was made possible through the support of the Swedish fire service," emphasises Lennart Myhlback.

ALTHOUGH MANY international operations have garnered a great deal of attention, Lennart Myhlback stresses that their work makes up just a small proportion of the total work of the SRSA.
"The SRSA was created for Sweden. It would have been easy to get sidetracked by the international work, but it was important to ensure this didn't happen."
As well as generating support for the SRSA among local fire brigades, the agency's international work has had another important function, he points out. It has helped Sweden gain a strong international reputation.
Proof of this came when the UN appointed a regional administrator in Kosovo, with responsibility for five municipalities and half a million residents. The position was given to Lennart Myhlback.
"1 was responsible for everything from refuse collection and schools to medical care. It was exciting work, but it was also incredibly difficult."
After three years working in Kosovo, Lennart Myhlback decided to leave his position as Director General of the SRSA.

IN RETROSPECT, the massacre in Rwanda in 1995 is the event that has left the strongest impression.
"I visited Nyamata when the bodies were still lying there. It was a horrendous sight, and the stench was sickening. But the experienced firefighters who were with me took care of me, and almost held my hand. It was a terrible thing to experience, but at the same time
I was impressed by their way of handling the situation."
"That was just one of many pieces of evidence that prove just how capable our fire service personnel are. It also showed that we made the right call when we decided to select mostly older, more experienced personnel for our operations."

SAFETY AND SECURITY - A NATURAL PART OF OPERATIONS

Since 11 September 2001, the working situation of personnel on humanitarian operations has become more difficult.

In the aftermath of the terrorist attack and the USA's response to it, murder, kidnapping and armed attacks on aid workers have become considerably more common. This is one of the reasons why the SRSA has put more of an emphasis on safety and security in recent years, partly by employing two experts in safety and security issues.

RISK ANALYSIS

Before a decision is made concerning an operation, a risk analysis is carried out using sources including UN contacts, personnel in the field, reports from aid organisations and security companies. A high potential threat does not necessarily mean a high risk, if various measures can be taken to reduce the risk. It may be possible to fulfill the objectives of an operation in a different way, with lower risks.
That's why these decisions cannot be made on the basis of a template or model - every situation has to be assessed individually.
Gathering and evaluating information on areas where the security situation is deteriorating is just as important as having a good basis for assessing safety before an operation.

TRAINING

Although good general safety assessments do exist, it is still the individual who has to make the crucial decisions in difficult situations. Training and informing operational personnel and their managers therefore forms a cornerstone of the SRSA's approach to safety and security.
Basic training for operational personnel and briefing days prior to operations always include discussions, facts and training exercises on safety threats.
"We often have excellent discussions on safety issues, since many of the participants have been on

operations before. This is of great help to personnel who then have to make their own decisions under stress;' says Anna-Maria Gabrielsson, safety expert.
"With solid knowledge, experience, and personnel who can make sound decisions, safety does not constitute an obstacle, but a natural part of the work that can increase the possibility of carrying out operations in difficult conditions» she emphasises.

TALKING THINGS THROUGH

Between them, the personnel of the SRSA have a great deal of experience in helping people who have been affected by emergency and disaster situations. Courses in this area have been run by the SRSA for many years, both in Sweden and internationally.

More recently, preventive stress management and debriefing have become more common. Since 2007, Folke Ryman has been in charge of stress management at the International Department. He has noticed that people's attitudes to various types of stress therapy have changed.

"Previously, many of the members of the SRSA teams were used to the grueling nature of their work as firemen or soldiers. They were sometimes dismissive of stress management. Now, many more different professions are involved in the teams, and therapy is generally seen as a matter of course':

All those who return home from an international mission are given the opportunity to talk through their experiences, often as part of SRSA reunions, and sometimes as soon as they arrive home. One of Folke Ryman's tasks is to ensure that crisis therapy procedures work smoothly. He also works as a stress coach and instructor.

"Preventive work should not be underestimated. By increasing awareness of stress, you can increase stress resistance. The challenge is to put theoretical knowledge into practice in reality' says Folke Ryman.

USEFUL RESOURCES

One example of a useful stress management resource is a relaxation CD that is given to all personnel before they embark on international missions. An information pack has also been developed specifically for relatives. It explains situations and feelings that can arise after a completed operation, such as exhaustion, illness, or in the most severe cases, breakdown.

"Stress research is a new academic discipline and it is developing fast. Attention is now given to how factors such as language, gender, environment, culture, hygiene, sleep, food and drink can affect us and contribute to stress' explains Folke Ryman.

THESOONERTHEBETTER

He receives feedback in several ways. The most tangible of these is when operational personnel get in touch to tell him that they have managed to get over their difficult emotions.

"The sooner therapy takes place after an operation, the less expertise is required. But just knowing that you have the option of talking things through is a comfort in itself;' says Falke Ryman.

CONSTANT DEMAND FOR DEDICATED OPERATIONAL PERSONNEL

The International Department of the SRSA has a constant need to extend its network of operational personnel.

PROFESSIONS NEEDED

The department's personnel pool consists of people in professions that are needed for international operations, such as incident commanders, mechanics, nurses, PR officers and experts in water, environmental and waste issues. When the need arises, the SRSA contacts the members of the pool that have the right skills.

VITAL CHARACTERISTICS

Characteristics that are vital for all members of the pool include commitment to helping their fellow men and women, and a strong will to work on behalf of those suffering to conflict or natural disasters.

INTRODUCTION

An important element of preparedness is to train the members of the personnel pool. The SRSA's

introductory course is the first step, and is obligatory for personnel before they embark on an operation.
This course provides an introduction to the SRSA's international work, and to other bodies that are active in this area.
It also covers the SRSA code of conduct, gender issues, cultural awareness and safety and security issues, as well as health care, group dynamics, conflict and stress management, radio communications and information handling.

MUST TRAVEL AT SHORT NOTICE

After completing this course, members of the personnel pool must be prepared to join operations at short notice - anything from a few weeks to six hours.

WRITING BANK

Транслітерація

Транслітерація – це спосіб перекладу лексичної одиниці зі збереженням її графічної форми і запису цього слова засобами іншої мови. Транслітерація використовується при записі власних назв – імен, прізвищ, географічних назв, назв вулиць, підприємств і т.д. Для транслітерації користуються правилами, які розроблені спеціально для передачі слів однієї мови буквами іншої мови. Існує англо-російська, німецько-українська транслітерації. У закордонних офіційних документах використовується загальноприйнята уніфікована латинська транслітерація.

Правила українсько-англійської транслітерації

Ukrainian letter	English letter	Note	Example
А	A		Алушта Alushta
Б	B		Бубнов Bubnov
В	V		Волинськ Volynsk
Г	G		Гданськ Gdansk
Г	H	У більшості випадків У сполученні з зг.	Григорій Hryhorii Згорани Zhorany
Д	D		Дон Don
Е	E		Рівне Rivne
Є	Ye Ie	На початку слова В інших випадках	Єнакієво Yenakievo
Ж	Zh		Житомир Zhytomyr
З	Z		Закрпаття Zakarpatia
И	Y		Медведин Medvedyn
І	I		Ірина Iryna
Ї Ї	Yi I	На початку слова В інших випадках	Їжакевич Yizhakevich Київ Kyiv
Й	Y I	На початку слова В інших випадках	Йосипівка Yosypivka Стрий Stryi
Р	R		Рівне Rivne
У	U		Ужгород Uzhgorod
Ф	F		Фастів Fastiv
Х	Kh		Харків Kharkiv
Ц	Ts		Цибулькін Tsybulkin
Ч	Ch		Кучеренко Kucherenko
Ш	Sh		Шевченко Shevchenko
Щ	Shch		Гоща Hoshcha
Ю	Yu Iu	На початку слова В інших випадках	 Крюківка Kriukivka
Я	Ya, ia		Яготин
Ь	‘	Пом'якшення не завжди передається в назвах, лише коли м'який знак стоїть між приголосними	Іркутськ Irkuts’k

2. Fill in the personal card

1. **NAME (**AS IN OFFICIAL DOCUMENTS**):** (Family Name)_____ (First Name)_____
   (Middle or Patronymic Name)_____
2. **COUNTRY OF CITIZENSHIP:** _____
3. **COUNTRY OF LEGAL RESIDENCE:** (City or Town)_____ (Country)_____
4. **PLACE OF BIRTH:** (City)_____ (Country)_____
5. **DATE OF BIRTH:** (Month)_____ (Day)_____(Year)_____
6. **GENDER/ SEX :** ❑ Male ❑ Female
7. **MARITAL STATUS:** ❑ Single ❑ Married CITIZENSHIP OF SPOUSE : _____
8. **HOME MAILING ADDRESS:** Street and building number: _____

Apartment: ____City: _____ Postal Index: _____Region: _____Country: _____
Telephone: ____ Fax: _____ Email: ____

10. **WORK ADDRESS:** Organisation:_____Department: _____Title: _____Rank:_____

Street / building number City: ____Postal Index: _____Country: _____ Telephone:_____

11. **NATIVE LANGUAGE CONTACT INFORMATION:**

NATIVE LANGUAGE IS: _____

Please complete just the following section in your native language.

(Family Name)_____(First Name)_____

(Middle or Patronymic Name)_____

HOME ADDRESS:_____

Emergency Contact Name: _____ Relationship: _____

Emergency Contact Address: _____

Emergency Contact Phone/Fax/Email: _____

3.Write the addresses according to the sample in the personal card:

Україна, м.Луцьк, вул. Каразіна, буд.5, кв.17

Буд.124-А, пров.Єсеніна, м.Дзержинськ, Дніпропетровська обл. Україна

Кв.34,буд.2, проспект Дружби Народів, м. Ічня, Закарпатська обл.,Україна

Буд.96, вул.50-річчя СРСР, селище Червоний Дінець, Артемівський р-н, Донецька обл.

Проспект Карла Маркса 74, м.Дніпропетровськ, Україна

4. Here are sonic formal written expressions and their spoken English meanings. Match them.
What is your name? – Family Name

What is your name?	COUNTRY OF CITIZENSHIP
Where do you work?	MARITAL STATUS
What is your position?	PLACE OF BIRTH
Are you married?	DATE OF BIRTH
How can we connect with you?	WORK ADDRESS
Where are you from?	NATIVE LANGUAGE
Do you speak English?	Home Telephone
Where were you born?	Family Name
When is your birthday?	Rank

When you need to get or show documents, it is important that you know the names of them. Here are some important ones. Match the names with the definitions:

Passport, identity card:	the official document which permits you to drive on public roads
Visa	the official document which discribes your work and study experience
resume	official pieces of paper stating certain facts, e.g. a birth certificate gives facts about your birth
Driving licence	States you have passed certain exams
Certificate	this gives you permission to enter, pass through or leave a country
exam certificate	a card with your name, date of birth and photo to show who you are.

There are also situations where you need to **fill in** (- complete) forms. Here are some:

landing card: a form you may have to fill in when you enter another country

enrolment / registration form: a form you often fill in when you do a course, go to a school or college,

application form: a form to write details of yourself, often when applying for a job.

With almost all forms, you will need to sign them (- write your signature)

a passport,an identity card, driving licence, marriage certificate, birth certificate, a TV licence, a degree certificate (from a university), an exam certificate for an English exam

3. Complete the form.

Application for a long stay visa (visa D) **PHOTO**

A. APPLICANT / ANTRAGSTELLER

1. Surname (Family name) / Name (Familienname)

2. Surname at birth / Familienname bei der Geburt

3. First name(s) (given names) / Vorname(n)

4. Date of birth (day-month-year) / Geburtsdatum (Tag-Monat-Jahr)

5. Place of birth / Geburtsort

6. Country of birth / Geburtsland

7. Current nationality(ies) / Derzeitige Staatsangehörigkeit(en)

Nationality at birth (if different) / Staatsangehörigkeit bei der Geburt (falls unterschiedlich)

8. Sex / Geschlecht

□ Male / Männlich **□ Female / Weiblich**

9. Marital status / Zivilstand

□ Single / Ledig **□ Registered partnership / Eingetragene Partnerschaft**
□ Married / Verheiratet **□ Widow(er) / Verwitwet**
□ Separated / Getrennt **□ Other (please specify) / Sonstiger (bitte nähere Angaben)**
□ Divorced / Geschieden

10. Father's surname and first name; place and country of birth / Name und Vorname des Vaters; Geburtsort und Geburtsland

11. Mother's surname and first name; place and country of birth / Name und Vorname der Mutter; Geburtsort und Geburtsland

12. In the case of minors: Surname, first name, address (if different from applicant´s) and nationality of parental authority/legal guardian / Bei Minderjährigen: Name, Vorname, Anschrift (falls abweichend von der des Antragstellers) und Staatsangehörigkeit des Inhabers der elterlichen Sorge/des Vormunds

13. Type of travel document / Art des Reisedokuments

□ Ordinary passport / Reisepass **□ Official passport / Amtlicher Pass**
□ Diplomatic passport / Diplomatenpass **□ Special passport / Sonderpass**
□ Service passport / Dienstpass
□ Other travel document (please specify) / Sonstiges Reisedokument (bitte nähere Angaben)

14. Number of travel document / Nummer des Reisedokuments

15. Date of issue / Ausstellungsdatum

16. Valid until / Gültig bis

17. Applicant's home address / Wohnanschrift des Antragstellers

Telephone number(s) / Telefonnummer(n)

18. Residence in a country other than the country of current nationality / Wohnsitz in einem anderen Staat als dem, dessen Staatsangehörige(r) Sie gegenwärtig sind

□ No / Nein

□ Yes. Residence permit or equivalent No.
Valid until
Ja. Aufenthaltstitel oder gleichwertiges Dokument Nr.
Gültig bis

19. Current occupation / Derzeitige berufliche Tätigkeit

20. Employer and employer's address and telephone number. For students, name and address of educational institution / Name, Anschrift und Telefonnummer des Arbeitgebers. Für Studenten, Name und Anschrift der Bildungseinrichtung

B. PURPOSE OF STAY / AUFENTHALTSZWECK

21. Purpose of the stay in Switzerland / Zweck des Aufenthalts in der Schweiz

□ Employment / Erwerbstätigkeit

□ Family reunion / Familiennachzug

□ Studies - Education / Studium - Ausbildung

□ Medical reasons / Gesundheitliche Gründe

□ Other (please specify) / Sonstiges (bitte nähere Angaben)

22. Duration of the intended stay / Dauer des geplanten Aufenthalts

Indicate number of months / Anzahl der Monate angeben

23. Intended date of arrival / Geplantes Ankunftsdatum

24. Probable adress in Switzerland / Voraussichtliche Adresse in der Schweiz

25. Number of entries requested / Anzahl der beantragten Einreisen

□ Single entry / Einmalige Einreise □ Two entries / Zweimalige Einreise

□ Multiple entries / Mehrfache Einreise

26. Previous stays in Switzerland / Bisherige Aufenthalte in der Schweiz

□ No / Nein

□ Yes. From to

Ja. Von bis

27. In case of family reunion: Relationship with the family member in Switzerland / Im Falle eines Familiennachzuges: Verwandtschaftsverhältnis zum Familienmitglied in der Schweiz

□ Spouse / Ehegatte □ Child / Kind □ Grandchild / Enkelkind

□ Dependent ascendant / Abhängiger Verwandter in aufsteigender Linie

Surname / Name

First name(s) / Vorname(n)

Date of birth / Geburtsdatum Nationality / Nationalität

If the family member is non-Swiss citizen: indicate type and number of the residence permit / Falls das
Familienmitglied kein Schweizer Staatsangehöriger ist: Typ und Nummer des Aufenthaltstitels angeben

Address of the family member / Adresse des Familienmitglieds

28. Name and address of employer - educational institution - medical facility in Switzerland / Name und Adresse
des Arbeitgebers - schulischen Einrichtung - medizinischen Einrichtung in der Schweiz

29. Description of the job - education - medical treatment in Switzerland / Beschreibung der Arbeitsstelle - der
Ausbildung - medizinischen Behandlung in der Schweiz

30. Travel expenses and costs of living during the applicant's stay are covered / Die Reisekosten und die
Lebenshaltungskosten während des Aufenthalts des Antragstellers werden getragen
□ by the applicant himself/herself / vom Antragsteller selbst

□ by a sponsor (host, company, organisation), please specify / von anderer Seite (Gastgeber, Unternehmen,

Organisation), bitte nähere Angaben

I agree, if deemed necessary, to submit my personal biometric identifiers (fingerprints and photograph) for identification purposes.
Falls es für die Identitätsabklärung für erforderlich gehalten wird, bin ich mit der Abnahme meiner biometrischen Daten (Fingerabdrücke und Gesichtsbild) einverstanden.
I declare that to the best of my knowledge the above particulars are correct and complete.
Ich versichere, vorstehende Angaben nach bestem Wissen und Gewissen richtig und vollständig gemacht zu haben.

Place and date / Ort und Datum

Signature / Unterschrift

LETTERS

Read the following letters. Which are formal ? What letters can be named informal? Why?

1.

Secretary
Administration Division to

Dear Mr. Collins
We have the honour to inform you that the Industrial Development Organization are organizing a Seminar on the Organization and Administration of Safety Practice in countries of East Europe to be held in Paris, France from 12-17 July 2004. The Resident Representative of the Industrial

Development Organization in your country invite you to participate in the event.
I would appreciate any assistance you can render on this project.
Accept, Sir, the assurances of my highest consideration.

Secretary
Administration Division
Industrial Development Organization

Vienna

2

Dear Ms.Star

Meeting you today was a real pleasure. I enjoyed touring your facility and seeing a staff. As we discussed, the position is an exciting one for which I am superbly qualified, and it would be an honor to join your team.
I will call on Friday as you suggested to see whether Roger Transwood has returned and is available to meet with me.
Thank you again for your time. I look forward to seeing you again very soon.
Sincerely, Thomas Hooker

3.

Secretary-General to
Rescue department of
Berlin district

Emergency Department
New York

Dear Mr. Yordan
I was very sorry to read reports about the extensive damage caused by recent floods in your country. I should be grateful if you transmit the attached message of sympathy from me to you and your stuff.

I remain,
dear Mr Yordan,
Yours sincerely
Paul Tiler
Secretary-General

4.

Dear Sirs,

We are sorry to inform you that your browser sent a request that our server could not understand.

Yours sincerely,
Administrator of Yahoo-server

4. Match a greeting with a suitable ending. Which are formal? Which are informal?

Dear Sir or Madam	Yours Bob
Darling Rosie	Yours faithfully Robert J. Fleming
Dear Ms McDonald	*Lots of love*
Dear Helen	Yours sincerely Robert Fleming
[illegible]	[illegible]

5. Below is mixed outline of a formal letter. Look at it carefully. Divide it correctly. Is it the same as in your country?

Introduction
Your address (not your name)
Main parts
The name and address of who
the greeting

Concluding comment
Date
The ending
Your signature

6. The following are the contents of a letter. Divide it correctly and fill the boxes in the letter above.

June 2000; Mr. Konstantin Emelyanov; ZAO "K.M.T. Construction Company"; st. Krylatskie Holmy 1, Moscow, Russia; Dear Mr. Emelyanov,; Hereby we confirm that the company ZAO "K.M.T. Construction Company" has been our contractor since 1995. "K.M.T. Construction Company" has completed a lot of construction works on renovation of apartments and offices in the complex Park Place Moscow.;Sincerely,;Alexey Kazakov,;Deputy General Director

6. **Read the letters. Compare them with formal letters in your country. Do you have many different greetings and endings for formal and informal letters and emails? Write a letter to your friend or a business partner.**

INVITATIONS TO CORRESPOND

Dear friend,

My English professor has told me that you would like to correspond with a guy from Russia. He has also given me your address and told me that I could write to you and suggest we correspond. I am doing this with great pleasure.

As I understand we are both studying foreign languages: you at a college and I at the university. That means that we should have a lot In common.

Please let me know soon if you are interested in my suggestion. If yes, please, write me about yourself, your family, your interests and hobbies.

I am looking forward to receive your letter.

Your pen friend,

INVITATIONS TO VISIT

Dear John,

Many thanks for your letter which came yesterday. It took a month. I am now sending another invitation as requested. I shall try and send this to you by personal courier in view of the postal problems.

I wonder when your are thinking of coming to Moscow. In some ways September would suit me best, as I have to be away most of the month and would like to have a "watchdog" in the house. But please arrange things as it suits you best.

With best wishes.

Yours very sincerely,

ANSWERS TO INVITATIONS TO VISIT

Dear Charles,

Many thanks for your letter and the formal invitation you enclose. It is very nice of you to offer to meet our expenses while we are in Britain. I gratefully accept it on the assumption that we shall have the pleasure of receiving you here as *the return part of the exchange visit.*

We can discuss all the points with you personally or by letter should you wish to come over before we go. I suppose this would be a very good idea as the dates of our visits are still vague. Anyhow, I want you to understand that we shall be delighted to have you here with us any time you choose to come.

Once again many thanks and best wishes from my wife and myself.

Yours sincerely,

Nikolay

CONGRATULATIONS

Dear Henry,

Thank you very much for your Christmas card. I hope you got mine. I'm afraid I sent it to an old address. It may be delayed. Once again my very best wishes for the coming year.

Everyours,

THANK-YOU LETTERS

Dear Livia:

Your gift awaited us when we returned home. It reminded us of your warm and sincere hospitality.

We shall treasure much the little bear. Most of all, every time we see it, we will think of our friendship.

Cordially yours,

EXCUSES

Dear Mr. Reynolds,

I want to apologize for not having answered your nice letter sooner, but I have been away on a trip and just returned today.

The photographs you sent are beautiful. My family and I appreciate them very much. They are the best kind of remembrance, and we are very grateful.

Again, please accept my apologies for the delay. And give my best regards to your family.

Sincerely yours,

REQUESTS

Dear Oscar,

I hope you will forgive me for troubling you, but it has occurred to me that you are the one person who may be able to help me.

I have to write e term paper on Idioms in the Plays of Shakespeare and I just can't find e good book referring to the subject

If you know of any book or any article which might be of assistance to me, I should be most grateful.

Yours sincerely,

Alexander

LETTERS OF CONDOLENCE AND SYMPATHY

Dear Lawrence,

I was just informed by our office manager of your brother's death. It is impossible to adequately express my sincere sympathy at this most difficult time.

I had worked very closely with Mark in the office. Therefore, I feel that I have lost a very good friend as well as a fellow coworker.

Please let me know if I can be of any help to you.

Sincerely yours

JOB-APPLICATION LETTERS

Dear Sirs,

*I am interested in the au pair * post at Oxford which I saw advertised in the newspaper The Sunday Times.*

I am eighteen years old, and now I am in my second year at the State University of St. Petersburg in the Department of English.

My father is an engineer here in St. Petersburg and my mother is a teacher of English.

I am fond of children and would be willing to help with yours and to do odd jobs about the house but, unfortunately, I am not very good at cooking.

I would be free from the middle of June until the end of August and would welcome the opportunity of practicing my English which I studied for eight years at school.

Should you be interested in my application, you could contact the following persons who are willing to act as references for me. They are...

I hope to hear from you at your earliest convenience.

Yours faithfully,

ANSWERS TO JOB-APPLICATION LETTERS

Dear Mr. Harvey,

I am writing to let you know that our visiting position in Physics has been filled.

Thank you for your interest in our College and please allow me to wish you the best of luck in your future endeavors.

Sincerely,

A. Albertson

APPLICATIONS FOR STUDIES

Dear Sirs,

I am greatly interested in your graduate program leading to a Ph. D. degree and should like to apply for admission to graduate status.

Could you kindly let me have an information brochure giving particulars on various academic curricula that are available as well as information on the facilities in the Department of the English Language?

Yours faithfully,

REFERENCES, RESUMES

*To whom it may concern **

I have known Mr. S. Antonov since he was a first year student at St. Petersburg University.

In my judgment and in that of my colleagues as well, he was an outstandingly exceptional student. His marks were consistently high. His work was performed seriously and conscientiously.

He is an honest, straight-forward, dependable and moral person, in short, he is a person of strong moral values.

He gets along with people well. He is a hard worker himself and at the same time demanding of others. He usually has the right judgment in decisions he takes.

If you have any questions or wish to have additional information, please, feel free to contact me at any time.

Sincerely yours,

BUSINESS LETTERS

POWER OF ATTORNEY

By Deviz Consulting International Limited

By this Power of Attorney given on the 5 day of January 1997 Deviz Consulting International Limited, the company incorporated and registered in the Russian Federation, having its registered office at: 54 Nevsky Prospect, Suite 15, St. Petersburg, 191011, Russia (hereinafter called "the Company") hereby appoints Mr.

Leonid Petrovich Petrov, Consultant on International Affairs of the Company, the true and lawful Attorney (hereinafter called "the Attorney") of the Company to represent and act in the name and on behalf of the Company.

And it is hereby declared that the Company ratifies and confirms and agrees to ratify and confirm whatsoever the Attorney shall do or purport to do by virtue of this Power of Attorney including in such confirmation whatsoever shall be done between the time of revocation of this Power of Attorney and the time of that revocation becoming known to the said Attorney.

In witness whereof this Power of Attorney has been executed this fifth day of January1997.

The common seal of

Deviz Consulting International Limited

was hereunto affixed in the presence of:

(signature)

Roman Gulyaev

General Manager of the company

Deviz Consulting International Limited

RECEIPT

The undersigned hereby acknowledges the receipt of Five Thousand ($ 5,000) US Dollars from Mr. Dmitry Petrov in full payment, satisfaction and discharge of the obligation dated May 13,1995 which is more particularly described as follows:

Signed and sealed this 30 *day of May, 1996.*

*Witness*_____

7.Rearrange the parts of letter and correct spelling mistakes:

Re. South Pacific Market

Dear Peter,

22 may

Thank you for your letter about your plans to market our products in the south pacific region.As you khow,we want to sel our gods in every free
market in the world,so naturallywe are interested in the region.
Obviousli we have to do some market reseorch
For nov,i have four guestions:

1.How is the present suppli and demand for our kind of prdoucts?

2.What kind of marketing mix do you think we should develop in our marketing plan?

3.what are the market trends inthis sector?

4.Can you recommend someone to carry out a detailed market analisis for us?

Peter Jarrow
p.o. Box 320
suva
fiji

I look forward to hearing from you as possible.

M&T Cables Gmbh

ANNOTATION

Read the examples of the annotation and answer the questions.

Division Officer's Guide has been written for the benefit of division officers, who constitute the foundation upon which a ship's organization is built. The division officer is close to his men; he organizes, trains, and directs them according to

the fundamental precepts of the Naval Service and with due regard for their individual development and personal needs.

This book is not a detailed study of each task to be performed by a division officer, but more a summary of what must be accomplished on board ship in the management of a strong, effective unit of men. Junior officers will find here many of the lessons usually learned only through long years of experience.

1. What is the title of a book?
2. What field of sciences or humanities is covered by this book?
3. What type of book is it?
4. What is the subject of the book?
5. What category of readers is it written for?

2. Read the examples of the annotations and determine the basic elements of annotation structure. Check the plan and say what elements are necessary or additional or false.

The title of this book, CHEMISTRY & CHEMICAL REACTIVITY, was chosen to convey its principal themes: a broad overview of the principles of chemistry and the reactivity of chemical elements and compounds. While attempting to provide a firm foundation in these areas, it is our hope also to convey a sense of chemistry as a field that not only has a lively history but also one that is currently dynamic, with important new developments on the horizon.

CHEMISTRY & CHEMICAL REACTIVITY is a textbook for introductory courses in chemistry for students interested in further study in science, whether that science is biology, chemistry, engineering, geology, physics, or related subjects. Our assumption is that students beginning this course will have had a basic foundation in algebra and some in general science. Although undeniably helpful, a previous exposure to chemistry is neither assumed nor required.

Professor Mehta has presented the subject of concrete in a remarkably clear and logical manner. Actually, he has adopted a rather revolutionary approach, rejecting the dry and pedantic presentations of past texts, in order to address concrete as a living material, both in itself and in its application to structures and facilities built to serve society. While this book accurately reflects the latest scientific advances in concrete structure and technology, it recognizes that working with concrete is an "art." Thus he has structured the book's arrangement and presentation from the point of view of the professional engineer charged with designing and building facilities of concrete. He introduces not only the latest understanding of this complex material but the new and exciting techniques that enable dramatic improvements in the properties and performance of concrete.The book is written primarily as an introductory text for Civil Engineering undergraduate students, but graduate students and professionals alike will find it useful for its explanations and comprehensive treatment of the many interactive aspects.

Forecast and Solution is a trilogy. **Book I** introduces a novel easy-to-use formula . The formula uses elementary algebra to show how long nuclear peace would tend to continue at different levels of proliferation and at different levels of peacefulness. The method is sufficiently clear that it can be used by, and is designed for, the general literate public, including those who have a non-mathematical orientation. Fifty-one graphs and a conversational style of writing make the material easily accessible. **Book II** introduces UNIFIED THEORIES. Here nuclear peacefulness is subdivided into components: Accident, Deterrence, and Civility. Using a technique called the "pulse train of nation-years," the book shows reliabilities required from each

of these components in order to support nuclear peace for designated periods. Accident, decision-making accuracy, psychological/psychiatric irrationality and pure deterrence are extensively analyzed using eighty-nine graphs. Ways to increase the number of years of peace are shown. **Book III,** almost exclusively in prose, analyzes WWI and its aftermath, especially some of the long-forgotten proposals of the League of Nations, which may well have come within a hairsbreadth of averting WWII.

2. Find in the annotations determined basic elements and mark the beginnings of each ones in the text.

Annotation

1. The title of a book.
2. The name of an author of the book.
3. The name of publishers, the date and place of issues.
4. The field of science, scope and subject of the book .
5. The price of the book.
6. The structure, design of the book.
7. The type of the book (textbook, reference, guide, manuals, summary).
8. The category of readers which the book is devoted for.

3.Write the plan of the annotation and put the sentences in right order according to your plan. Add your own sentences when needed.

1) M.B.A. and M.P.A. programs are typical graduate programs having this type of requirement.

2) It provides a comprehensive treatment of selected topics in both finite mathematics and calculus.

3) It is appropriate for use in both two-year schools and four-year schools, as well as at the "foundation" level for graduate programs which require some mathematics background.

4) This book is an applied mathematics book for students in business, economics, and the social sciences.

5) Designed primarily for a two-term course, the book can be adapted easily for a one-term course

6) Although intended principally for students in business and economics, the book is appropriate for students in the social sciences.

RESUME

,

1. Look at the chart of resume below and fill in it.

The following resume sections are required for every resume:

Contact

Information

Experience

Education

Summary

Information

2.From the list below, select any optional sections you would like to add to your resume.

	Objective
	Skills
	Certifications
	Professional Associations
	Languages
	Patents and Publications
	Awards
	Volunteer Experience
	Hobbies
	Personal Information
	Contact Information
	First Name
	Last Name
	Primary Address

2. Read and match the instructions for writing summary for your disered employment. Complete summary for employment of secretary, shop-assistant, travel agent, rescuer.

OBJECTIVE	[Describe your career goal or ideal job.]
EXPERIENCE	[Job Title] [Dates of employment] [Company Name], [City, ST] [Job responsibility/achievement]
EDUCATION	[School Name], [City, ST] [Dates of attendance] [Degree obtained] [Special award/accomplishment or degree minor]
INTERESTS	[Briefly list interests that may pertain to the type of job you want.]
REFERENCES	References are available on request.

When we speak about desired employment we are to select **Job Category**:
Accounting/Finance
Advertising/Public Relations/ Arts/Entertainment/Publishing /Banking/Mortgage/Clerical/Administrative/ Construction/Facilities/ Customer Service /Education/Training Engineering/Architecture/ Government/Military Healthcare/ Hospitality/Travel
Human Resources/ Insurance/ Internet/New Media /Law Enforcement/Security/ Legal /Management Consulting /Manufacturing/Operations/ Marketing /Non-Profit/Volunteer/ Pharmaceutical/Biotech/ Real Estate/ Restaurant/Food Service/ Retail/ Sales/ Technology /Telecommunications/ Transportation/Logistics/ Other
Next we select **position type** : Employee, Contract, Temp, Temp to Hire
Then we select **employment type**: Full Time, Part Time
We must say about **minimum annual salary** required: Unspecified, $75,000; $175,000 etc.
Speaking about **experience level** we select level : 0-1 years experience, 1-2 years experience, 2-5 years experience, 5-10 years experience 10-15 years experience, 15+ years experience
If your work require travel we select **desired travel**: Negligible Up To 25%; Up To 50% ; Up To 100%
When we speak about **work authorization** we say:
I have the legal right to work in the following countries:_____
We select **Languages Spoken** among all the languages.

3.Read the work advertisement and write resume fitted the requrements mentioned in it

1)

Chief: Milpitas , CA. City of Milpitas .
Requirements: Competitive candidates should possess a well rounded background in the fire service and understand all aspects of department administration. Candidates should possess twelve years of broad experience in all phases of municipal fire

suppression and prevention work, including five years in a responsible management capacity. A Bachelor's Degree from an accredited college with major course work in fire science, public administration, business administration, or a related field is required. Apply to: Please submit resumes to: Regan Williams, Bob Murray and Associates, 735 Sunrise Ave., Suite 145, Roseville, CA 95661or call (916) 784-9080 Also online at: www.bobmurrayassoc.com deadline: 4/22/05

2)

Firefighter/Paramedic: Steamwood, IL. Village of Streamwood.

Requirements: Applicants for the position of firefighter/paramedic shall be either [1.] certified by the State of Illinois Department of Public Health as EMT/Paramedics or [2.] certified by the State of Illinois Department of Public Health as an Emergency Medical Technician / B and must be enrolled in Emergency Medical Technician / Paramedic classes at an accredited degree granting college or university as listed in the current edition of Accredited Institutions of Postsecondary Education published by the American Council on Education, at the time of application to the Streamwood Fire Department. Candidates must be fully certified EMT/Paramedics by the State of Illinois Department of Public Health at the time of appointment. Applicants must be high school graduates, or equivalent. Applicants must be citizens of the United States of America. Applicants must have a valid Illinois drivers license. Applicants must be at least twenty (20) years of age, but not have reached their thirty-fifth birthday, as of the last date for filing of applications. Applicants must have reached their twenty-first (21st) birthday, but not their thirty-sixth birthday, by date of hire. Apply to: Streamwood Police Department, 401 East Irving Park Rd., Streamwood, Illinois 60107 or online at: www.streamwood.org/jobs Deadline: 4/29/05

3)

Chief: Stafford, VA. Stafford County Government. Requirements: Any combination of education and experience equivalent to a Bachelor’s Degree in Fire Services, Emergency Services or related field and

5.Read and translate the following Characteristics of Signs of the Zodiac. Find your sign. Use descriptions of charachter in your resume in the line personal information

Capricorn (December 22-January 20)

Ambitious, know where they are going, but can become negative and lacking in self-confidence. Cautious, reserved, musical. Dry sense of humor.

Aquarius (January 21-February 18)

Individualistic, original, and idealistic. Inventive, helpful, and loyal. Good mixers but unconventional and unpredictable. "Private people."

Pisces (February 19-March 20)

Dreamers. Inconsistent. Can become deceitful to avoid tricky situations. They find the caring professions and artistic activities most satisfying.

Aries (March 21-April 20)

Positive, masculine, extrovert, selfish, and careless. People born under Aries are leaders, winners, "me-first people."

Taurus (April 21-May 21)

Steadfast, reliable, loving, enjoyers of the good things of life. Progressive, persistent, and practical with a lot of common sense.

Gemini (May 22-June 21)

Versatile, lively, communicative, intellectually stimulating. Restless, often leaving tasks unfinished as they switch from one interest to another.

Cancer (June 22-July 22)

Sensitive, protective, imaginative, and intuitive. Good memory. Strongly attached to home and family. Moody, emotional, and prone to worry.

Leo (July 23-August 23)

Big-hearted, bossy, and optimistic. Enthusiastic, with expensive taste and a great sense of drama. Leos make good managers and organizers.

Virgo (August 24-September 22)

Modest, charming, shy, energetic, and hard-working. Particularly like serving others. Logical, analytic, and critical.

Libra (September 23-October 23)

Need to share their lives and find balance and harmony. Peace-loving, charming, diplomatic, and hard-suffering. Indecisive and resentful.

Scorpio (October 24-November 22)

Powerful emotional and physical resources. Need to direct their energy in rewarding directions. Difficult for them to talk about their problems.

Sagittarius (November 23-December 21)

Deep need for freedom. Enthusiastic and versatile with a flair for languages. Enjoy a challenge. Eternal students. Blindly optimistic

EXAMPLES OF RESUME:

Kyle Bailey
918 El Segundo Blvd.
Los Angeles, CA 90011
(619) 555-0812
kbailey@earthlink.com

OBJECTIVE

A challenging and rewarding possition in the airline industry.

EXPERIENCE

1997 - Present *Air West* *San Francisco, CA*
Customer Service Supervisor
Opened San Jose Airport Customer Service Center facility for Air West and created efficient and effective operations. Trained and supervised 50 customer service agents and ramp personnel. Responsible for daily operations decisions and dealt effectively with all crises. Received recognition for successfully loading planes and preparing them for departure in under 20 minutes, over 90% of the time. Devised successful schedules enabling four planes to be serviced simultaneously. Reduced industrial accidents by 64%.

1990 - 1997 *Air West* *San Francisco, CA*
Customer Service Agent
Responsibilities included ticket sales, boarding supervision and customer service during a period of phenomenal company growth. Became an expert at problem solving and dealing with customer complaints.

1987 - 1990 *Piedmont Airlines* *San Francisco, CA*
Customer Service Agent
Worked with staff to create the best connecting flight service available to passengers. Devised schedules enabling four planes to be serviced simultaneously.

EDUCATION

Biola University, La Mirada CA, 1990
B.A., Business Administration, Communications

Objective: A secretarial position in a fast-paced environment.

Skills:

Excellent Organizational Skills
Strong Customer Relations Skills
Computer Proficiency
Data Entry
Telephone Answering, 12-Line System
Word Processing & Typing
10-Key Calculator
Filing

Computer: Lotus 1-2-3, WordPerfect 5.1, Microsoft Word, Alpha IV Data Base, DOS.

Experience:

Secretary 1990 to Present
ABC Computer Service, Inc. Taylor, Michigan
Handled all word processing and typing. Entered data for reports, production items, shipping, and inventory. Maintained computerized inventory of all parts, supplies, and products. Helped plan and organize company functions. Answered the telephone and represented the company in a professional and businesslike manner.

Accomplishments:

Researched and set up a voice mail answering system. Result: Saves time for both the receptionist and the customers.

Created, organized, and set up an information center for manuals and schematics. Result: Better access to needed information, and less time searching for it.

Employee of the Month, July, 1993.

Sales Clerk 1989 - 1990
The Gap Taylor, Michigan

Education:

Word Processing/Data Processing 1987 - 1989
Wayne County Community College Taylor, Michigan

Diploma 1987
Monroe High School Monroe, Michigan

References:

Furnished on request.

Firefighters Resume

Desired Industry: Firefighter/Paramedic/Emergency

Desired Job Location: Los Angeles, California
Date Posted: 11/16/2009
Type of Position: Full-Time Permanent
Availability Date: 1/1/10
Desired Wage: open
U.S. Work Authorization: Yes
Job Level: New Grad/Entry Level
Willing to Travel: Yes, More Than 75%
Highest Degree Attained: Other
Willing to Relocate: Yes

Objective:

To preserve life ,the enviorment, and property. To begin my career and continue to educate myself to a paramedic firefighter.I want to be a company's engineer one day.

Experience:

I'v done ride alongs with Santa Clara city fire as well as time in the ER as a volunteer. I recently obtained my EMT certification.

Education:

I have an AS degree in Fire Protection Technology with a 4.0 GPA. I am Hazmat certified , certified in rough terrain rescue, and ICS-195. Wildland certification and EMT.

WORD LIST

UNIT 1

administrative
bilingual
command
educational
effort
entire
export
flexible
force
growth
imagination
language
major
purpose
relatively
society
to assist
to belong
to grasp
to require
tongue
affluent
apparently
gender
makeshift
memoir
merely
nigger
pidgin
queer
regardless
sensory

share

term

to assign

to inherit

to rank

to resemble

to shock

to switch

unique

UNIT 2

aerial

aim

ambulances

among

armed forces

border

civil

civilized

clay

crash

custom

defence

devoted

disaster

discovery

earthquake

endangered

enforcement

equipment

flood

floodwaters

gear

harmful

helicopters

injured

kindling

military

observation

ore

pottery

prevention

property

protection

reorganization

rescue

rescue missions

rubber

safety

saving

separating

service

shape

skyscrapers

smuggler

squad

steamship

storm

sugar refinery

to accomplish

to deliver

to drive

to furnish

to generate

to hover

to pick up

to remove

UNIT 3

unsatisfactory

vehicle

weapon

essential

faithfulness

gift

goddess

guess

hearth

mythology

priest

religion

rock

sacred

shrine

spark

stricken

to attend

to contain

to depend

to gain

to observe

to regard

to select

to shine

to strike

welfare

worship

UNIT 4

burning charcoal

combustion

dynamite

explosion

formerly

gasoline

glow

gunpowder

heat

magnesium

manner

oil

oxidation

oxygen

rag

rate

rust

spontaneous

substance

sudden

to expand

to give off

to increase

to obtain

to occupy

to oxidize

to prove

to require

to soak

to throw

to unite

violent

volume

whenever

UNIT 5

afterward(s)

amount

ash

bottom

carbon chimney

coke

compound

content

current

dioxide

dirty

engine

enough ever

exhaust зи

filament

fireplace

furnace

improvement

neighbourhood

nuisance

particle

pipe

soot

stove

sufficient

to add

to mix

to waste

unite

usable

UNIT 6

ancient

ancient Rome

bucket

crew

false alarm

fire engines

governor

hand pump - hazard

hook

improvement

insurance

prominent

rattle

rope

scholar

source

steam

technique

to alert

to appoint

to attach

to create

to encourage

to establish

to hire

to patrol

to pull down

to serve

vigil

warden

UNIT 7

aircraft

apparatus

arson

band

battalion

bazaar boundary

chiefly

cluster

contribution

emergency

fair

fuel

headquarters

heritage

insignificant

installation

lieutenant

membership

nucleus

predominantly

profit

radiation

revenue

roughly

routine

rural

subscriber suburban

tax

to accomplish

to ensure

to house

to maintain to rely

to staff

to supplement

trend

wage

UNIT 8

accomplished

adequacy

adjacent

aide

alleyway arrival

assigned

availability

canvas

designate

dispatcher

distraught

endangered

expected

helmet

hose occupant

overhaul

pent-up

precise

quarter

reconnaissance

response

salvage

severe

supply

UNIT 9

aerial

compartment

extension fireboat

harbour

hydraulic

integral

jack

ladder

marine

nozzle

pier

pumper

rig

satellite

semi-trailer

tanker

to rate

to rotate

tool

turntable

technique threat

to board

to bottle up

to confine

to declare

to eject

to extinguish

to hook up

to indicate

to notify

to play

to pride

to renovate

to sift to size-up

to spread

to stretch

to undertake

to vary

underneath vent

ventilation

UNIT 10

agent

carbon dioxide

combustible

compartment

container

current

dry chemical (extinguisherextinguisher)

film flammable

foam

grease

liquefied gas (extinguisher)

multipurpose

portable

rubber

switch

to ban

to deposit

to enable

to harm

to squeeze

valve

code

escape

evidence

fiercely

grease

official

outlet

overloading

purposely

practice squad

to attach to confine

to crawl

to enforce

to estimate

to fan

to smother

to supervise

to trap

UNIT 11

crisis

cycles

to facilitate

inadequacies

objective

to occur

recovery

straightforward

approach

events

to prevent

communication systems

delivery

restoration

evaluation

relief efforts

to strike

again

diversification

to ensure

offset

local storage

climatic conditions

comprehensive

response

government

major earthquake

UNIT 12

responsibility

business and industry

obligation

to protect

manufacturer's instructions

device

to provide

consumer

working conditions

to furnish safety equipment

vehicles

highway

household

goods

health

accident
death
insurance
to support
to conduct
traffic accident

GRAMMAR REFERENCE

Система часів в англійській мові

	PRESENT ТЕПЕРІШНІЙ ЧАС	PAST МИНУЛИЙ ЧАС	FUTURE МАЙБУТНІЙ ЧАС
INDEFINITE (SIMPLE) НЕОЗНАЧЕНИЙ ЧАС	(+)V/Vs (-?)DO/DOES he / she / it + DOES + I live in Kharkiv. (Я живу у Харкові.) He lives in Kharkiv. - I do not (don't) usually drink coffee in the morning. (Зазвичай я не п'ю каву зранку.) He doesn't drink … ? Do you often listen to the music? (Ви часто слухаєте музику?) Does he listen to the music? Він слухає…?	(+) V2 (-?) DID+V1 + I lived in Kharkiv three years ago.(Я жив у Харкові три роки тому.) - I did not (didn't) live in Kharkiv in 2002. (Я не жив у Харкові у 2002 році) ? Did you live in Kharkiv last year? (Ви жили у Харькові у минулому році?)	WILL / SHALL + V1 + I will/shall (I'll) live in Kharkiv. (Я буду жити у Харкові.) - I will/shall not (won't/shan't) live in Kharkiv. (Я не буду жити у Харкові.) ? Will you live in Kharkiv? (Ви будете жити у Харкові?)
CONTINUOUS (PROGRESSIVE) ТРИВАЛИЙ	BE + V+ing he, she, it + IS I + AM we, they, you + ARE + I am working now. (Я працюю зараз.) -I am not working now. (Я не працюю зараз.) ?Are you working now? (Ви зараз працюєте?)	BE + V+ing was (однина)/were (множина) + I was working at 7 o'clock last night. (Я працював вчора ввечері о сьомій.) -I was not working at that time yesterday. (Я не працював вчора о цій годині.) ?Were you working from 2 to 3? (Ви працювали з 2 до 3 години?)	WILL/SHALL+BE + V+ing be (для усіх осіб) + I will/shall be working tomorrow at 9 o'clock. (Завтра о 9 я буду працювати.) -I will/shall not be working at 9. (Завтра я о 9 не буду працювати.) ? Will you be working at 9? (Ви будете працювати о 9?)

	PRESENT ТЕПЕРІШНІЙ ЧАС	PAST МИНУЛИЙ ЧАС	FUTURE МАЙБУТНІЙ ЧАС
PERFECT ЗАВЕРШЕНИЙ (ПЕРФЕКТНИЙ) ЧАС	HAVE/HAS + V3 he, she, it + HAS + I have done everything. (Я все зробив.) He has done everything. -I have not (haven't) done everything yet. (Я ще не все зробив.) He hasn't done everything. (Він не все зробив.) ? Have you done everything? (Ви все зробили?) What has she done? (Що вона накоїла?)	HAD + V3 + I had done everything by 5 o'clock. (Я все зробив до 5 години.) -I had not (hadn't) done everything when the lesson finished. (Я не все зробив, коли закінчилося заняття.) ? Had you done everything by the beginning of September? (Ви все зробили до початку вересня?)	WILL/SHALL+HAVE + V3 + I will/shall have done everything by 6 o'clock. (Я все зроблю до 6 години.) -I will/shall not have done everything when the lesson is over. (Я зроблю все до того часу, коли закінчиться заняття.) ? Will you have done everything by September? (Ви зробите все до початку вересня?)

Система часів в англійській мові. Група Indefinite.

Теперішній неозначений час (The Present Indefinite Tense)

Present Indefinite вживається для вираження дії, що регулярно повторюється, або дії, яка відбувається в теперішньому часі, без зазначення її тривалості чи завершеності. Ключові слова цього часу:

usually, sometimes, often, seldom, always, every week, every month.

Стверджувальна форма	Питальна форма	Заперечна форма
Інфінітив дієслова без частки to (крім III особи однини). I ос. I We II ос. You III ос. **He, She, It** They В III особі однини до дієслова додаємо закінчення –S: *He work**s** at the University.* Виняток: 1) основа на –о додаємо es *goes, does*; 2) основа на -s, -ss, -sh, -ch, -x + es *watches*; 3) приголосна + y → i + es *studies*; голосна + y + s *plays.*	Допоміжне дієслово DO/DOES перед підметом і інфінітив основного дієслова без частки to. **Do** you know much about fire? ***Does** your mother like your profession?* ***Do** you know any legends about fire?*	Допоміжне дієслово DO/DOES, заперечна частка NOT і інфінітив основного дієслова без частки to. I do not (don't) know any legends about fire. *He does not (doesn't) tell me about it.* *This text does not describe these historical periods.* *I do not agree with you.*

Система часів в англійській мові. Група Indefinite.

Минулий неозначений час (The Past Indefinite Tense)

Past Indefinite вживається для вираження дії, що відбулася або відбувалася в минулому, яка звичайно позначається такими обставинними словами, як: *yesterday, the day before yesterday, last week (month, year), a minute ago,* etc.

Стверджувальна форма	Питальна форма	Заперечна форма
Дієслово в формі Participle II (для правильних дієслів + **ed** , для неправильних – II форма дієслова за таблицею). *Hundreds years ago people us**ed** fire to cook food.* *Smoking caus**ed** a small fire in our house last year.* *The fire **caught** many houses.*	Допоміжне дієслово DID перед підметом і інфінітив основного дієслова без частки to. What **did** you learn about kinds of fire? ***Did** your friend know differences between burning and combustion?*	Допоміжне дієслово DID, заперечна частка NOT і інфінітив основного дієслова без частки to. The oxydation **did not** (didn't) take place. *The slow burning **did not** (didn't) cause an explosion.*

Система часів в англійській мові. Група Indefinite.

Майбутній неозначений час (The Future Indefinite Tense)

Future Indefinite вживається для вираження дії, що відбудеться в майбутньому. Може перекладатися українською мовою дієсловом у майбутньому часі як доконаного, так і недоконаного виду. Обставинні слова *tomorrow, next month (year, week), in three days* тощо уточнюють майбутній час дії.

Стверджувальна форма	Питальна форма	Заперечна форма
Допоміжне дієслово WILL (SHALL - 1 особа) та інфінітив основного дієслова без частки to *Hydrogen **will** unite with oxygen.* *Some energy of a fire **will** go into light.*	Допоміжне дієслово WILL (SHALL - 1 особа) перед підметом і інфінітив основного дієслова без частки to. ***Will** ash unite with oxygen?* *When **will** carbon monoxide form?*	Допоміжне дієслово WILL (SHALL - 1 особа), заперечна частка NOT і інфінітив основного дієслова без частки to. *An entire piece of wood or coal **will not** (won't) burn.* *Light **will not** (won't) produce gas.*

ВИНЯТОК:

В обставинних підрядних реченнях умови і часу після сполучників *if , when, as soon as, before, untill, till, unless, povided (that)* та інших для вираження майбутньої дії замість Future Indefinite вживається Present Indefinite.

***When** he comes from the University, we shall do our home tasks together.*

***Unless** you make some more experiments, you will not get accurate data.*

Система часів в англійській мові. Група Continuous.

Теперішній тривалий час (The Present Continuous Tense)

Present Continuous вживається для вираження дії, яка відбувається в момент мовлення. Українською мовою перекладається дієсловом теперішнього часу недоконаного виду.

Стверджувальна форма	Питальна форма	Заперечна форма
Допоміжне дієслово to **BE** (am, is, are) та інфінітив основного дієслова без частки to із закінченням –ing (Participle I). *The fire brigade **is** localizing the fire now.* *The firemen **are** discuss**ing** the results of the arson investigation.*	Допоміжне дієслово to **BE** (am, is, are) перед підметом і інфінітив основного дієслова без частки to із закінченням –ing (Participle I). *What **is** this man do**ing**?* *What **are** these firemen talk**ing** about?*	Допоміжне дієслово to **BE** (am, is, are), заперечна частка NOT і інфінітив основного дієслова без частки to із закінченням –ing (Participle I). *The alarm **is not** (isn't) ring**ing** now.* *The fire **is not** (isn't) spread**ing**.*

Система часів в англійській мові. Група Continuous.

Минулий тривалий час (The Past Continuous Tense)

Past Continuous уживається для вираження дії, яка відбулася в минулому до певного моменту і продовжувала відбуватися в той момент. Перекладається українською мовою дієсловом минулого часу недоконаного виду.

Стверджувальна форма	Питальна форма	Заперечна форма
Допоміжне дієслово to **BE** (was, were) та інфінітив основного дієслова без частки to із закінченням –ing (Participle I). *The firemen **were** train**ing** from 2 till 3 o'clock.* *At that moment the chief **was** train**ing** his crew.*	Допоміжне дієслово to **BE** (was, were) перед підметом і інфінітив основного дієслова без частки to із закінченням –ing (Participle I). *What **was** the victim do**ing** when his house was in fire?* *Where **were** you giv**ing** a lecture on fire prevention yesterday at five?*	Допоміжне дієслово to **BE** (was, were), заперечна частка NOT і інфінітив основного дієслова без частки to із закінченням –ing (Participle I). *They **were not** try**ing** to get out of the house.* *The fireman **was not** wait**ing** for the fire to spread.*

Система часів в англійській мові. Група Continuous.

Майбутній тривалий час (The Future Continuous Tense)

Future Continuous вживається для вираження дії, яка відбуватиметься в якийсь момент або протягом указаного періоду часу в майбутньому. Перекладається українською мовою дієсловом майбутнього часу недоконаного виду.

Стверджувальна форма	Питальна форма	Заперечна форма
Допоміжне дієслово WILL (SHALL - 1 особа), допоміжне дієслово to **BE** та інфінітив основного дієслова без частки to із закінченням –ing (Participle I). *The firemen **will be** inspect**ing** the houses for fire hazards from 2 till 5 tomorrow.* *With the help of the fire axes the fire fighters **will be** cutt**ing**, pry**ing**, digg**ing**, and batter**ing** during a fire.*	Допоміжне дієслово WILL (SHALL - 1 особа) перед підметом, допоміжне дієслово to **BE** і інфінітив основного дієслова без частки to із закінченням –ing (Participle I). ***Will** the firemen **be** fight**ing** small fires with booster lines?* *What **will** the fire fighter **be** do**ing** during the coming Fire Prevention Week?*	Допоміжне дієслово WILL (SHALL - 1 особа), заперечна частка NOT, допоміжне дієслово to **BE** і інфінітив основного дієслова без частки to із закінченням –ing (Participle I). *The trucks **will not** (won't) **be** carry**ing** outdated ladders anymore.* *I **shall not** (shan't) **be** cry**ing.** I shall do my best in any emergency.*

Система часів в англійській мові. Група Perfect.

Теперешній завершений час (The Present Perfect Tense)

Present Perfect вживається: **1)** для вираження вже завершеної до даного моменту дії, коли інтерес становить результат дії, а не час її завершення: *We have already extinguished the fire*. **2)** у сполученні з обставинними словами та виразами , які вказують на теперішній час, такими як *today, this week (month year)* тощо: *We have worked at the laboratories twice this week.* **3)** у сполученні з прислівниками неозначеного часу, такими як *already, often, seldom, never, ever, just, yet,* etc, з прислівником *since*: *Have you ever seen a real fire?*

Present Perfect звичайно перекладається українською мовою дієсловом минулого часу доконаного виду. Однак є випадки, коли дія, виражена Present Perfect, не довершена на момент мовлення, не має значення результативності і перекладається дієсловом теперішнього часу: *He has worked as a fire fighter since he graduated from preliminary courses.*

Стверджувальна форма	**Питальна форма**	**Заперечна форма**
Допоміжне дієслово HAVE (HAS – 3 особа однини) та основне дієслово в формі Past Participle (для правильних дієслів + **ed** , для неправильних – III форма дієслова за таблицею). *The cadets **have** just found out that the basic unit of fire fighting apparatus is the pumper.* *The engine **has** mov**ed** to the fire.*	Допоміжне дієслово HAVE (HAS – 3 особа однини) перед присудком та основне дієслово в формі Past Participle (для правильних дієслів + **ed** , для неправильних – III форма дієслова за таблицею). ***Have** you ever **seen** the new fire pumper?* ***Has** he **told** you about this accident?*	Допоміжне дієслово HAVE (HAS – 3 особа однини), заперечна частка NOT та основне дієслово в формі Past Participle (для правильних дієслів + **ed** , для неправильних – III форма дієслова за таблицею). *The cadets **have not** (haven't) **seen** such tools yet.* *These rescuers **have not** us**ed** the elevating platform during the accident today.*

Система часів в англійській мові. Група Perfect.

Теперішній завершений чи минулий неозначений час (The Present Perfect or Past Indefinite Tense)

Present Perfect (інформація про теперішній час)	**Past Indefinite** (інформація про минулий час)
1. використовується, коли надається нова інформація, але далі використовується Past Indefinite: *— Look? The firemen **have extinguished** a fire.* *— How **did** they **do** it?* *— They **worked** together as real professionals.*	1. використовується у випадках, не пов'язаних з теперішнім часом (історичні події і т.п): *Augustus **formed** a group called the vigiles.*
2. використовується для передачі інформації про тривалість процесу (*How long*) зі словами *since, for*: *— How long **have** you **used** this tool?* *— I **have used** it for two years.*	2. використовується з питальними словами *when* (коли) або *what time* (о котрій): *When **did** you see the fire?*
3. використовується з обставинами теперішнього часу (this month, this morning, today, recently) та прислівниками *never, ever*: *The fire **has** already **been** put out today.*	3. використовується з обставинами вже минулого часу (*yesterday, two years ago, in 1988, when I was a child,* зі словами *last, ago*): *The fire fighters **began** the work known as "overhaul" three hours ago.*

Система часів в англійській мові. Група Perfect.

Минулий завершений час (The Past Perfect Tense)

Past Perfect вживається: 1) для вираження дії, що минула, яка відбулася до певного моменту в минулому: *They had finished all calculations by the end of the last week*. 2) для вираження дії, що минула, яка завершилася перед іншою минулою дією: *The firemen had done all the work before there was a snowfall*.

Стверджувальна форма	Питальна форма	Заперечна форма
Допоміжне дієслово HAD та основне дієслово в формі Past Participle (для правильних дієслів + **ed** , для неправильних – III форма дієслова за таблицею). *Before setting off to the fire, the incident commander had received the information of the site location.* *The volunteer **had** already **set aside** all other activities and rushed to the fire department.*	Допоміжне дієслово HAD перед присудком та основне дієслово в формі Past Participle (для правильних дієслів + **ed** , для неправильних – III форма дієслова за таблицею). ***Had** the fire **spread** before the firemen came?* ***Had** the fire fighters extinguish**ed** the fire by the evening yesterday?*	Допоміжне дієслово HAD, заперечна частка NOT та основне дієслово в формі Past Participle (для правильних дієслів + **ed**, для неправильних – III форма дієслова за таблицею). *The chief officer **had not** (hadn't) **found** any civilians in danger before putting out the fire.* They **had not** complet**ed** the rescue mission, when there was an explosion.

Майбутній завершений час (The Future Perfect Tense)

Future Perfect вживається для вираження майбутньої дії, яка завершиться до певного моменту або до початку іншої дії в майбутньому, і перекладається дієсловом доконаного виду майбутнього часу: *We shall have finished the work by 7 p.m. tomorrow.*

Стверджувальна форма	Питальна форма	Заперечна форма
Допоміжне дієслово WILL (SHALL - 1 особа), допоміжне дієслово HAVE та основне дієслово в формі Past Participle (для правильних дієслів + **ed** , для неправильних – III форма дієслова за таблицею). *We **shall have** extinguish**ed** the fire by 5 o'clock.*	Допоміжне дієслово WILL (SHALL - 1 особа) перед присудком, допоміжне дієслово HAVE та основне дієслово в формі Past Participle (для правильних дієслів + **ed** , для неправильних – III форма дієслова за таблицею). ***Will** you **have** receiv**ed** all the instructions by 3 o'clock tomorrow?*	Допоміжне дієслово WILL (SHALL - 1 особа), заперечна частка NOT, допоміжне дієслово HAVE та основне дієслово в формі Past Participle (для правильних дієслів + **ed** , для неправильних – III форма дієслова за таблицею). The fire fighters **will not** (won't) **have had** time to check the equipment

		by 8 o'clock.

ТАБЛИЦЯ НЕПРАВИЛЬНИХ ДІЄСЛІВ

I форма	II форма	III форма	IV форма
I. arise	arose	arisen	підійматися
2. be	was, were	been	бути
3. bear	bore	born	народжувати
4. become	became	become	зробитися, стати
5. begin	began	begun	починати (ся)
6. bend	bent	bent	гнути
7. bind	bound	bound	зв'язувати
8. bite	bit	bitten (bit)	кусати (ся)
9. bleed	bled	bled	сходити кров'ю
10. blow	blew	blown	дути
11. break	broke	broken	ламати (ся)
12. breed	bred	bred	виховувати
13. bring	brought	brought	приносити
14. build	built	built	будувати
15. bum	burnt	burnt	горіти, палити
16. buy	bought	bought	купувати
17. cast	cast	cast	кидати
18. catch	caught	caught	ловити, схоплювати
19. choose	chose	chosen	вибирати, добирати
20. come	came	come	приходити
21. cost	cost	cost	коштувати
22. cut	cut	cut	різати
23. dig	dug	dug	рити, копати
24. do	did	done	робити
25. draw	drew	drawn	тягти; малювати
26. dream	dreamt	dreamt	мріяти, бачити уві сні
27. drink	drank	drunk	пити
28. drive	drove	driven	вести, гнати
29. eat	ate	eaten	їсти
30. fall	fell	fallen	падати
31. feed	fed	fed	годувати
32. feel	felt	felt	почувати (себе)
33. fight	fought	fought	боротися, битися
34. find	found	found	знаходити
35. flee	fled	fled	тікати; рятуватися
36. fly	flew	flown	літати
37. forget	forgot	forgotten	забувати
38. get	got	gotten (got)	одержувати
39. give	gave	given	давати
40. go	went	gone	іти, ходити
41. grow	grew	grown	рости, ставати
42. hang	hung	hung	вішати, висіти
43. have	had	had	мати
44. hear	heard	heard	чути
45. hide	hid	hidden	ховати

46. hold	held	held	тримати
47. keep	kept	kept	тримати, зберігати
48. know	knew	known	знати
49. lead	led	led	вести
50. learn	learnt	learnt	вчити (ся)
51.1eave	left	left	залишати
52. lend	lent	lent	позичати
53. let	let	let	дозволяти, здавати в найми
54. light	lit	lit	запалювати, засвічувати
55. lose	lost	lost	губити, втрачати
56. make	made	made	робити
57. mean	meant	meant	значити
58. meet	met	met	зустрічати
59. put	put	put	класти
60. read	read	read	читати
61. ride	rode	ridden	їздити верхи
62. rise	rose	risen	підніматися
63. run	ran	run	бігти
64. say	said	said	сказати
65. see	saw	seen	бачити
66. sell	sold	sold	продавати
67. send	sent	sent	посилати
68. set	set	set	поміщати; заходити (про сонце)
69. shake	shook	shaken	трясти
70. shine	shone	shone	сяяти, блищати
71. shoot	shot	shot	стріляти
72. shut	shut	shut	закривати, зачиняти
73. sing	sang	sung	співати
74. sink	sank	sunk	поринати
75. sit	sat	sat	сидіти
76. sleep	slept	slept	спати
77. smell	smelt	smelt	нюхати, пахнути
78. speak	spoke	spoken	говорити, розмовляти
79. spend	spent	spent	витрачати
80. spoil	spoilt	spoilt	псувати
81. spread	spread	spread	поширювати
82. spring	sprang	sprung	стрибати
83. stand	stood	stood	стояти
84. steal	stole	stolen	красти
85. stick	stuck	stuck	приклеювати
86. sting	stung	stung	жалити
87. stride	strode	stridden	крокувати
88. strike	struck	struck	бити; страйкувати
89. strive	strove	striven	старатися
90. swear	swore	sworn	присягати
91. sweep	swept	swept	мести, підмітати
92. swim	swam	swum	плавати
93. swing	swung	swung	гойдатися
94. take	took	taken	брати
95. teach	taught	taught	вчити
96. tear	tore	torn	рвати

97. tell	told	told	казати
98. think	thought	thought	думати
99. throw	threw	thrown	кидати
100. thrust	thrust	thrust	штовхати
101. tread	trod	trodden	ступати
102. understand	understood	understood	розуміти
103. upset	upset	upset	перекидати;
104. wake	woke	woken	прокидатися
105. wear	wore	worn	носити
106. weave	wove	woven	ткати
107. weep	wept	wept	плакати
108. win	won	won	перемагати
109. wind	wound	wound	заводити
110. withdraw	withdrew	withdrawn	брати назад, відкликати
111. wring	wrung	wrung	скручувати
112. write	wrote	written	писати