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МИНИСТЕРСТВО ОБРАЗОВАНИЯ И НАУКИ РФ  
НОВОСИБИРСКИЙ ГОСУДАРСТВЕННЫЙ  
УНИВЕРСИТЕТ

Факультет иностранных языков

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**Человек и природа.**  
**Проблемы окружающей среды.**  
(книга для чтения по английскому языку)

Учебное пособие

Новосибирск  
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Учебное пособие (книга для чтения по английскому языку) предназначено для студентов физического факультета 3-ого курса.

Целью пособия является совершенствование навыков чтения, в основном ознакомительного и поискового, а также развитие умения говорить на темы, связанные с природными явлениями и взаимодействием человека с природой.

Пособие включает 4 раздела, названные соответственно: «Сейсмические явления», «Парниковый эффект», «Энергетический кризис», «Загрязнение окружающей среды».

Каждый раздел включает следующие компоненты: серию вопросов, имеющих целью подготовить студентов к новой теме; основной текст с заданиями мотивирующими чтение; упражнения на проверку понимания и на формирование умения резюмировать содержание; темы для дискуссии; темы для письменного сочинения. Кроме того, в каждом разделе предлагается несколько коротких дополнительных текстов и грамматический комментарий с последующими упражнениями. В конце пособия предлагается небольшой глоссарий с транскрипцией труднопроизносимых слов и объяснением значений на английском языке.

Автор выражает глубокую признательность Н.Б. Тумановой Н. С. Тюриной за полезные замечания и ценные рекомендации.

#### Рецензенты

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### Ecology Energy Crisis

As human knowledge expands, we learn more and more about the physical world that surrounds us. At the same time, our world can be easily destroyed both by natural disasters (earthquakes, volcanoes, typhoons) and human-triggered disasters (global warming, ecosystem collapse, energy crisis...). Will our knowledge be great enough to save the planet and ourselves?

Do the following activities which introduce the vocabulary of disasters:

**I. Study the table and say whether these disasters are natural or human-triggered.**

<b>Earthquakes</b> (the earth moves/trembles)	<b>Explosions</b> (e.g., a bomb)	The “ <b>greenhouse effect</b> ” (rising temperatures)
<b>Hurricanes/tornadoes/typhoons</b> (violent, winds/storms)		<b>Major accidents</b> (e.g., a plane crash, a fire)
<b>Energy crisis</b> (Fossil fuels are running out)		<b>Floods</b> (too much rain) <b>Drought</b> (no rain) <b>Famine</b> (no food)
<b>Volcanoes</b> (hot liquid rock and gases pour from a mountain)	<b>War /civil war/terrorism</b>	<b>Epidemics</b> (diseases effecting large numbers of people)

**II. See if you can translate the verbs connected with the words given above.**

A volcano has *erupted* in Indonesia. Hundreds are feared dead.

The flu epidemic *spread* rapidly throughout the country.

Millions *are starving* as a result of the famine.

A big earthquake *shook* the city at noon today.  
 The area *is suffering* its worst drought for many years.  
 Civil war *has broken* out in the north of the country.

A tornado *swept* through the islands yesterday.

**Remember:** injure (people), damage (things):

Many people were injured and dozens of buildings were damaged in the hurricane.

**III.** Study the words for people involved in disasters/tragedies. Try to define them in your own words.

The explosion/typhoon/flood resulted in 300 *casualties*.

The real *victims* of the civil war are the children left without parents.

There are only three *survivors*. All the other passengers were reported dead.

Thousands of *refugees* have crossed the border looking for food and shelter.

**IV.** Here are three headlines from newspapers connected with disasters and epidemics. Do you know these diseases and what causes them?

<b>Rabies</b> out of control in many parts of Asia	New <b>malaria</b> drug tested	<b>Cholera</b> and <b>typhoid</b> injections not needed, says Tourism Minister
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**V.** Identify the following types of disasters. Use the table discussed above.

*Example:* The lava flow destroyed three villages. *Volcano; lava is hot liquid rock that comes from a volcano*

1. The earth is cracked and vegetation has withered.
2. The tremor struck at 3:35 p.m. local time.
3. People had boarded up stores and houses and stayed indoors.
4. Shelling and mortar fire could be heard all over the town.
5. Witnesses said they saw a fireball fall out of the sky.

**VI.** Complete this word-class table, using a dictionary if necessary. Where there is a dash, you do not need to write anything.

<i>Verb</i>	<i>Noun: thing or idea</i>	<i>Noun: person/people</i>
..... injure	Explosion .....	– the injured
..... starve	survival .....	..... .....
erupt	.....	--

**VII.** In these headlines, say whether the situation seems to be getting worse or better, or whether a disaster has happened or has been avoided.

1.	3.	5.
POISON GAS CLOUD SPREADS	POLICE DEFUSE TERRORIST BOMB	OIL SLICK RECEDES
2.	4.	6.
AIDS TIME BOMB TICKING AWAY	ALL SURVIVE JUMBO EMERGENCY LANDING	FLOOD WARNINGS NOT HEADED IN TIME

**VIII.** Fill in the blanks with words from task III. Try to work from memory.

- Another 50 people died today, all ..... of the famine.
- The government has agreed to allow 3,000 ..... trying to escape the civil war enter the country.
- It was a tragic highway accident, with over 120 .....
- A: Were there any ..... from the ship that sank?  
B: I'm afraid not.

**IX.** Which diseases are described below? Try to do this from memory.

- One that can be caused by a mosquito bite.
- One you can get by drinking infected water.
- One you can get from an animal bite.

**Selection 1**

**SEISMIC PHENOMENA**

This selection deals with seismic phenomena such as volcanoes, earthquakes and so on.



### Pre-reading

1. Look at the picture and say what kind of disaster it is: natural or human triggered.
2. Answer the following questions:
  - Have you ever experienced an earthquake or seen an active volcano?
  - Do you know why such events occur?
  - What is a volcano?
  - What famous volcanoes do you know?
3. Fill in the gaps with the appropriate word related to the natural disasters, pay attention to their pronunciation:  
forest fire [ ɒfɔːrɪst ɒfaɪə ], Earthquake [ ɜːθkweɪk ],  
drought [ draʊt ], tidal waves [ taɪdɪ weɪvz ], famine [ ɸʒmɪn ],  
flood [ flʌd ].
  - 1) Many people went without water for days during the...
  - 2) ... .. often occurs in hot countries, where it is difficult to grow food because there is no rain.
  - 3) In a(n) ... .. you should leave your house in case it collapses.
  - 4) The ... .. was severe that whole houses were washed away.
  - 5) When he saw the glow in the hills, Jim phoned the police to report a(n) ... ..
  - 6) ... .. have been known to crash over coastal towns, destroying them completely.
4. Guess the meaning of the words on the left by reading their definitions on the right and give Russian equivalents:
  - 1) eruption – outbreak of a volcano
  - 2) to astound – to surprise greatly
  - 3) to deceive – to mislead on purpose
  - 4) tremor – shaking or trembling
  - 5) to bulge – to become greater in volume, force
  - 6) mud – soft, wet earth
  - 7) debris – scattered broken pieces
  - 8) to swell – to increase in volume or numbers
  - 9) to amass – to pile or heap up, collect (data)



- 10) negligible – of little or no importance or size
- 11) threat – an intention to punish or hurt smb.
- 12) to surge – to move forward

Words to note:

- 1) Dormant- alive but not growing
- 2) Lull – period of small activity

## **Reading**

### **The Spectacular Eruption of Mount St. Helens**

#### **Task I**

See if you remember the following:

1. around 1900 B.C.
2. about A.D. 1500

#### **Task II**

Read quickly through the text below, then match each question with the appropriate paragraph labeled A-I.

1. Which paragraph compares the eruption to the energy released by nuclear bombs?
2. Which paragraph describes the evacuation of the mountain?
3. Which paragraph describes the moment of the explosion of Mount St. Helens?

### **The Spectacular Eruption of Mount St. Helens**

**A.** The eruption in May 1980 of Mount St. Helens, Washington State, astounded the world with its violence. A gigantic explosion tore much of the volcano's summit to fragments; the energy released was equal to that of 500 of the nuclear bombs that destroyed Hiroshima in 1945.

**B.** The event occurred along the boundary of two of the moving plates that make up the Earth's crust. They meet at the junction of the North American continent and the Pacific Ocean. One edge of the continental North American plate over-rides the oceanic Juan de Fuca micro-plate, producing the volcanic Cascade range that includes Mounts Baker, Rainier and Hood, and Lassen Peak as well as Mount St. Helens.

**C.** Until Mount St. Helens began to stir, only Mount Baker and Lassen Peak had shown signs of life during the 20<sup>th</sup> century. According to

geological evidence found by the United States Geological Survey, there had been two major eruptions of Mount St. Helens in the recent (geologically speaking) past: around 1900 B.C., and about A.D. 1500. Since the arrival of Europeans in the region, it had experienced a single period of spasmodic activity, between 1831 and 1857. Then, for more than a century, Mount St. Helens lay dormant.

**D.** By 1979, the Geological Survey, alerted by signs of renewed activity, had been monitoring the volcano for 18 months. It warned the local population against being deceived by the mountain's outward calm, and forecast that an eruption would take place before the end of century. The inhabitants of the area did not have to wait that long. On March 27, 1980, a few clouds of smoke formed above the summit, and slight tremors were felt. On the 28<sup>th</sup>, larger and darker clouds, consisting of gas and ashes, emerged and climbed as high as 20,000 feet. In April a slight lull ensued, but the volcanologists remained pessimistic. Then, in early May, the northern flank of the mountain bulged, and the summit rose by 500 feet.

**E.** Steps were taken to evacuate the population. Most campers, hikers, timber-cutters left the slopes of the mountain. Eighty-four-year-old Harry Truman, a holiday lodge owner who had lived there for more than 50 years, refused to be evacuated, in spite of official and private urging. Many members of the public, including an entire class of school children, wrote him, begging him to leave. He never did.

**F.** On May 18, at 8.32 in the morning, Mount St. Helens blew its top, literally. Suddenly, it was 1300 feet shorter than it had been before its growth had begun. Over half a cubic mile of rock had disintegrated. At the same moment, an earthquake with intensity of 5 on the Richter scale was recorded. It triggered an avalanche of snow and ice, mixed with hot rock – the entire north face of the mountain had fallen away. A wave of scorching volcanic gas and rock fragments shot horizontally from the volcano's riven flank, at an inescapable 200 miles per hour. As the sliding ice and snow melted, it touched off devastating torrents of mud and debris, which destroyed all life in their path. Pulverised rock climbed as a dust cloud into the atmosphere. Finally, viscous lava, accompanied by burning clouds of ash and gas, welled out of the volcano's new crater, and from lesser vents and cracks in its flanks.

**G.** Afterwards, scientists were able to analyze the sequence of events. First, magma- molten rock- at temperatures above 2000eF. Had surged

into the volcano from the Earth's mantle. The build-up was accompanied by an accumulation of gas, which increased as the mass of magma grew. It was the pressure inside the mountain that made it swell. Next, the rise in gas pressure caused a violent decompression, which ejected the shattered summit like a cork from a shaken soda bottle. With the summit gone, the molten rock within was released in a jet of gas and fragmented magma, and lava welled from the crater.

**H.** The effects of the Mount St. Helens eruption were catastrophic. Almost all the trees of the surrounding forest, mainly Douglas firs, were flattened, and their branches and bark ripped off by the shock wave of the explosion. Ash and mud spread over nearly 200 square miles of country. All the towns and settlements in the area were smothered in an even coating of ash. Volcanic ash silted up the Columbia River 35 miles away, reducing the depth of its navigable channel from 40 feet to 14 feet, and trapping sea-going ships. The debris that accumulated at the foot of the volcano reached depth, in places, of 200 feet.

**I.** The eruption of Mount St. Helens was one of the most closely observed and analyzed in history. Because geologists had been expecting the event, they were able to amass vast amounts of technical data when it happened. Study of atmospheric particles formed as a result of the explosion showed that droplets of sulphuric acid, acting as a screen between the Sun and the Earth's surface, caused a distinct drop of temperature. There is no doubt that the activity of Mount St. Helens and other volcanoes since 1980 has influenced our climate. Even so, it has been calculated that the quantity of dust ejected by Mount St. Helens – a quarter of a cubic mile- was negligible in comparison with the thrown out earlier eruptions, such as that of Mount Katmai in Alaska in 1912 (three cubic miles). The volcano is still active. Lava domes have formed inside the new crater, and have periodically burst. The threat of Mount St. Helens lives on.

### **Task III**

Comprehension check

Read the text more carefully and answer the following questions:

1. What are the dates of the TWO major eruptions of Mount St. Helens before 1980?

2. How do scientists know that the volcano exploded around the two dates above?
3. How long had scientists been monitoring the volcano before the eruption in May 1980?
4. When exactly were slight tremors felt?
5. How did people behave during the volcano eruption?
6. What was recorded at the moment when the eruption of the volcano began?
7. Can you restore the sequence of events describing the explosion of Mount St. Helens?
8. Can you give the examples of the catastrophic effects of Mount St. Helens?
9. Is Mount St. Helens calm or active now?

**Task IV**

Complete the summary of events below leading up to the eruption of Mount St. Helens.

In 1979 the Geological Survey warned ..... to expect a violent eruption before the end of the century. The forecast was soon proved .... . At the end of March there were tremors and clouds formed above the mountain. This was followed by a lull, but in early May the top of the mountain rose by ..... . People were ..... from around the mountain. Finally, on May 18<sup>th</sup> at ....., Mount St. Helens exploded.

**Task V**

Complete the table below giving evidence for the power of the Mount St. Helens eruption.

Item	Equivalent to
1. The energy released by the explosion of Mount St. Helens	
2. The area of land covered in mud or ash.	
3. The quantity of dust ejected	

### **Task VI**

Choose the appropriate letter A-D.

According to the text the eruption of Mount St. Helens and other volcanoes has influenced our climate by ...

- A. increasing the amount of rainfall
- B. heating the atmosphere
- C. cooling the air temperature
- D. causing atmospheric storms

### **Task VII**

Talk it over.

- 1. Can computer simulations be used to forecast the eruption of volcanoes?
- 2. What places on the Earth do you consider seismically the most dangerous?

### **Task VIII**

Prepare a one-minute talk about a famous natural disaster. Use your experience or any information you like. Be ready to defend it in class.

## **Supplementary texts**

### **I. Gamma-ray Burst**

Read the text and answer the following questions:

- 1. What is the origin of gamma-ray bursts?
- 2. How often do these events occur?
- 3. Are they dangerous for our planet?

### **Gamma-ray Burst**

If you could watch the sky with gamma-ray vision, you might think you were being stalked by cosmic paparazzi. Once a day or so, you would see a bright flash appear, briefly outshine everything else, then vanish. These gamma-ray bursts, astrophysicists recently learned, originate in distant galaxies and are unfathomably powerful as much as 10 quadrillion (a one followed by 16 zeros) times as energetic as the sun. The bursts probably result from the merging of two collapsed stars. Before the cataclysmal event, a double star might be almost completely undetectable, so we'd likely have no advance notice if one is lurking nearby. Once the burst begins, however, there would be no missing its

fury. At a distance of 1,000 light-years (farther than most of the stars you can see on a clear night) it would appear about as bright as the sun. Earth's atmosphere would initially protect us from most of the burst's deadly X rays and gamma-rays, but at a cost. The potent radiation would cook the atmosphere, creating nitrogen oxides that would destroy the ozone layer. Without the ozone layer, ultraviolet rays from the sun would reach the surface at nearly full force, causing skin cancer and, more seriously, killing off the tiny photosynthetic plankton in the ocean that provide oxygen to the atmosphere and bolster the bottom of the food chain. All the gamma ray bursts observed so far have been extremely distant, which implies the events are rare. Scientists understand so little about these explosions, however, that it's difficult to estimate the likelihood of one detonating in our galactic neighborhood.

## **II. Collapse of the Vacuum**

Read the text and say if the phenomenon of collapse of the vacuum is familiar to you.

Do you agree with the idea that the laws of physics would change if collapse of the vacuum happened?

### **Collapse of the Vacuum**

In the book *Cat's Cradle*, Kurt Vonnegut popularized the idea of "ice-nine", a form of water that is far more stable than the ordinary kind, so it is solid at room temperature. Unleash a bit of it, and suddenly all water on Earth transforms to ice-nine and freezes solid. Ice-nine was a satirical invention, but an abrupt, disastrous phase transition is a possibility. Very early in the history of the universe, according to a leading cosmological model, empty space was full of energy. This state of affairs, called a false vacuum, was highly precarious. A new, more stable kind of vacuum appeared and, like ice-nine, it quickly took over. This transition unleashed a tremendous amount of energy and caused a brief run-away expansion of the cosmos. It is possible that another, even more stable kind of vacuum exists, however. As the universe expands and cools, tiny ripples of this new kind of vacuum might appear and spread at nearly the speed of light. The laws of physics would change in their wake, and a blast of energy would dash everything to bits. "It makes for a beautiful story, but it's not very likely", says Piet Hut of the Institute for Advanced Studies in Princeton, New Jersey. He says he worries more

about threats that scientists are more certain of – such as rogue black holes.

### **III. Rogue Black Holes**

Read the text and answer the following questions:

1. Why are scientists so worried about Rogue Black Holes?
2. What harm can they do to our galaxy?

### **IV. Rogue Black Holes**

Our galaxy is full of black holes, collapsed stellar corpses just a dozen miles wide. How full? Tough question. After all, they are called black holes for a reason. Their gravity is so strong they swallow everything, even the light that might betray their presence. David Bennett of Notre Dame University in Indiana managed to spot two black holes recently by the way they distorted and amplified the light of ordinary, more distant stars. Based on such observations, and even more on theoretical arguments, researchers guesstimate there are about 10 million black holes in the Milky Way. These objects orbit just like other stars, meaning that it is not terribly likely that one is headed our way. But if a normal star was moving toward us, we'd know it. With a black hole there is little warning. A few decades before a close encounter, at most, astronomers would observe a strange perturbation in the orbits of the outer planets. As the effect grew larger, it would be possible to make increasingly precise estimates of the location and mass of the interloper. The black hole wouldn't have to come all that close to Earth to bring ruin; just passing through the solar system would distort all the planets' orbits. Earth might get drawn into an elliptical path that would cause extreme climate swings, or it might be ejected from the solar system and go hurtling to a frigid fate in deep space.

### **V. Reversal of Earth's Magnetic Field**

Read the text and discuss ecological problems this phenomenon can cause.

#### **Reversal of Earth's Magnetic Field**

Every few hundred thousand years Earth's magnetic field dwindles almost to nothing for perhaps a century, then gradually reappears with the north and south poles flipped. The last such reversal was 780,000

years ago, so we may be overdue. Worse, the strength of our magnetic field has decreased about 5 percent in the past century. Why worry in an age when GPS has made compasses obsolete? Well, the magnetic field deflects particle storms and cosmic rays from the sun, as well as even more energetic subatomic particles from deep space. Without magnetic protection, these particles would strike the Earth's atmosphere, eroding the already beleaguered ozone layer. Also, many creatures navigate by magnetic reckoning. A magnetic reversal might cause serious ecological mischief. One big caveat: "There are no identifiable fossil effects from previous flips", says Sten Odenwald of the NASA Goddard Space Flight Center. "This is most curious." Still, a disaster that kills a quarter of population, like the Black Plague in Europe, would hardly register as a blip in fossil records.

## **VI. The essential lesson from the Japan earthquake for the U.S.**

Read the text and answer the following questions:

1. What were the consequences of the 2011 earthquake for Japan?
2. What is the difference between the 2010 Haiti earthquake and the 2011 Japan earthquake?
3. How does Japan prepare for earthquakes ?
4. Does the U.S. have an earthquake problem? Give examples from the text.

What essential lessons from the Japan earthquake did the U.S. get?

As we watch in the images rolling in from Japan we are yet again reminded of the sudden destructive potential of mother Earth. The number of fatalities is currently in the hundreds; the number displaced from their homes is in the tens of thousands. The tsunami generated by this magnitude 8.9 earthquake sent a wall of water sweeping across Japan, and across the Pacific. It was more than 30 feet high in places and reached six miles inland carrying cars, homes and everything else with it. Although the earthquake was 230 miles northeast of Tokyo, this was the worst shaking that people have felt in a city used to earthquakes. Explosions at the Fukushima Daiichi Nuclear Power Station have leaked



radioactive material into the surrounding area, and we will undoubtedly hear of other catastrophic impacts over the next few days.

But it could have been much worse. The 2010 Haiti earthquake was magnitude 7; Japan's earthquake released almost 1000 times more energy than the Haiti event. Yet it is estimated that more than 200,000 people were killed in Haiti compared to the current estimate of hundreds in Japan. The reason for this difference is that Japan is one of the most earthquake-ready countries on Earth, Haiti was not.

For decades Japan has steadily pushed the limits of earthquake preparedness. It invests in research and development to understand the earthquake process and create infrastructure that is better able to withstand future effects. Their state of the art buildings shake but do not collapse. Classes about earthquakes in their schools make earthquake preparedness part of everyone's lifestyle, and regular public earthquake drills reinforce this for a lifetime. Their seismic networks, the best in the world, provide a tsunami warning system, and more recently an earthquake warning system that provided tens of seconds warning in this earthquake.

This long-term investment that Japan has made to reduce the impact of earthquakes seems like a very good deal today. It has undoubtedly saved many thousands of lives, and will also reduce the long-term impact of the earthquake on the economy as Japan rapidly bounces back. The investment will pay for itself many times over for this earthquake, and the next.

In the U.S. we also have an earthquake problem. Our west-coast cities are built atop active fault zones that give us occasional jolts reminding us of their presence from time to time. The 1989 magnitude 7.0 Loma Prieta earthquake was one such reminder, as was the 1994 magnitude 6.7 Northridge earthquake. Both events were moderate in size and the strongest shaking was in unpopulated mountainous areas. We have not seen the true power of west-coast earthquakes since 1906 when a magnitude 8 earthquake destroyed San Francisco. Los Angeles, the San Francisco Bay Area, or Seattle could be next.

Today, we should not have any illusions about the ability of an earthquake to bring wide-spread destruction a modern city. We most recently experienced the might of mother Earth in the U.S. when Hurricane Katrina hit New Orleans in 2005. In addition to the immediate destruction of the widespread flooding, New Orleans also stands as a testament to the long-term effects of these events on our cities. The recent census count shows that the New Orleans population is still down almost one third since the previous pre-Katrina count.

So what is our fate on the west coast? Do we follow Japan's lead, or do we fall back in the direction of Haiti? We must use this terrible event in Japan as a reminder to redouble our efforts to build an earthquake resilient society. We need to invest in the research and the development that brings about better earthquake safety. We must push the limits of our technologies to deliver new earthquake mitigation strategies.

Modern buildings are built to standards that make them unlikely to collapse, but we need to focus on improving older buildings to bring them up to modern standards. We need more education about earthquake preparedness in our schools, and large-scale drills such as the California Shake-Out. And we need a warning system, like the one that delivered a warning in Japan. A prototype is operational in California. With only a moderate investment, public warnings could be available state-wide. Perhaps this warning from Japan can spur the investment now. We will be very glad we did when the next earthquake strikes.

By Richard Allen , 2011

**VII.** On the right, there are six extracts from reports of earthquakes. Match the endings (a – f) to the stories (1 – 6).

a) "...luckily everything seems to be intact."	1. Reports are coming in of an earthquake in China. The epicentre is located near the town of Tanshang, which has only recently been rebuilt after a severe earthquake in 1976. The extent of the damage is so far not clear but some casualties have occurred,.....
--	--

<p>b) "...now he has an extra view across the valley."</p>	<p>2. The President has declared a state of emergency to deal with the consequences of the earthquake which hit the area around Lake Van last night. Casualties are said to be very high and in some villages, where older and less substantial buildings predominate, it is said that....</p>
<p>c) "...was buried under several tons of rubble".</p>	<p>3. North Lancashire received the brunt of the earthquake, though it was felt as far south as parts of Cheshire. One resident of Carnforth, Dr D. Tye has this to say: "I was just reaching for a bottle to refill my glass when there was this extraordinary feeling that the house was moving under me. The bottle almost fell over, but fortunately I caught it in time. The lampshade started to sway and there are some very odd noises, but....</p>
<p>d) "... mainly as a result of falling masonry from roofs."</p>	<p>4. Only one death has been reported, the result of falling chimney which brought down with it the ceiling of the bedroom immediately below. The weight of falling masonry caused the bedroom floor to give away and Mr. Wheeler, who was in the sitting-room,.....</p>

<p>e) “ ... I said, there wasn’t much left.”</p>	<p>5. “I was driving along the coast road when the car suddenly lurched to one side. At first I thought a tyre had gone but then I saw telegraph poles collapsing like matchsticks and the road looked as if it had turned to liquid, moving about and cracking, like some sort of syrup with a crust on top. It was then that the rocks came down across the road and I had to leave the car. When I got back to town across the hill, well, as.....”</p>
<p>f) “... not a house remains standing.”</p>	<p>6. “There was a sharp sound like something cracking and I realised I could see daylight through the wall; then just as quickly the gap closed again and all you can see now is this line running up from the door. They say it won’t be a big job to patch it up. My neighbour wasn’t so lucky. His wall cracked but it didn’t close up again, so.....”</p>

**Discussion:**

Fortunately our region hasn’t faced any global natural disasters. What about human – triggered disasters?

What human – triggered disasters happened or can happen in Siberia?

Our place is rich in forests. Do we always take care of them?

Why are trees so important?

In what way are forests damaged? What will happen if forests continue to be damaged?

**VIII. Do you think that forests are safer in Europe than in Siberia?**

Read the newspaper article below and answer this question.

Choose from the list (A-H) the statement which best summarises each part (0-6).

There is one extra statement which you do not need to use.

- A More research is needed to find out the reasons for tree damage.
  - B The situation in Europe may soon get better.
  - C Environmental damage is threatening certain European industries.
  - D Planting more trees is only part of the solution.
  - E Threatened trees need European protection.
  - F Europe's trees have been harmed in a variety of ways.
  - G The forestry industry has acted more quickly than European governments.
  - H Europe should pay more attention to its own environmental problems.
0. Forestry experts have called on the European Union to use its powers in order to protect the continent's wood-lands This follows the publication of a recent report showing that one quarter of Europe's trees showed signs of severe damage The experts are asking for wide-ranging action as it now seems clear that Europe's forests are reaching crisis point.
1. "Less than one per cent of our ancient forests remain," he added "If this is allowed to continue, the damage to our forest systems will result in a reduction in water quality and will cause a crisis in the fishing, tourist and timber industries, as well as threatening the ecological balance in Europe".
  2. The study examined trees across the whole of Europe and found that they were being damaged throughout the continent Twenty-six per cent of Europe's trees had lost significant numbers of leaves, while more than ten per cent showed signs of discoloration
  3. Nigel Dudley, a specialist forestry adviser, says that the forestry industry has made substantial progress in organising a programme of forest management, but in his opinion European governments have not been acting quickly enough. Dudley believes that there is a need for further European action on commitments made at the Rio Earth Summit in 1992.
  4. The report also put forward factors such as air pollution and climate change as causes of this environmental problem Responding to the report, however, a European spokesman said it was too early to be certain about what was that causing the widespread damage. The European Commission has now begun a more detailed 20-year study which will

hopefully produce clearer answers.

5. Francis O'Sullivan, senior forestry officer at the World Wildlife Fund for Nature (WWF), pointed out: "While Europe is quick to condemn tropical countries over their forestry policies, it has been ignoring the crisis in its own backyard. Europe now has fewer forests than any other continent except Antarctica, and has less protected woodland than any other region in the world."
6. Next month the WWF will be reporting on how well governments around the world have kept their Rio summit promises. Most governments are expected to get poor reports. The situation in Europe may, however, be about to improve as the European Parliament is to begin investigating forest protection and may ask for new safeguards to protect the health of Europe's trees.

### **IX. Follow up:**

If you were the Secretary for Natural Resources what would you do to improve the situation?

To do this task you may look through the text and pick out the necessary vocabulary.

### **Listening.**

#### **Disasters:**

#### **I. Listen to three short texts. As you listen, take notes about:**

- a. what each disaster was
- b. where each one happened
- c. how much damage was done
- d. the number of casualties

#### **II. Compare what you heard with a partner. Then listen again and try to guess the meaning of the words printed in bold type:**

1. I couldn't believe it either, but apparently England is **particularly prone to them**, they said.
2. It ripped through a residential area and some houses **had their roofs blown off**, a few garden sheds were blown to pieces, lots of windows got blown out.

3. ... a few people ended up in hospital with cuts and bruises from all the flying **debris**.
4. Oh, and there was a cow involved as well! It got sucked up and **dumped** about a mile away in a supermarket car park!
5. It was just incredible how **upbeat** he seemed — given the circumstances.
6. You just have to **pick up the pieces and move on** — get on with rebuilding your life after something like that happens.
7. At least fifteen thousand people are feared dead and the **death toll** is expected to rise in the days ahead.
8. The quake occurred at 5.28am local time and it is thought that many people were **crushed** as they slept.
9. A telephone hotline for donations is being **launched** today.

## II. After-listening

Which disaster do you think is the most dangerous one?

### Grammar notes.

Can you translate the following sentence properly?

“The potent radiation would cook the atmosphere, creating nitrogen oxides that would destroy the ozone layer.”

If not, these **Grammar Commentaries** can help you.

### I. Participle

The Participle is a non-finite form of the verb expressing action and possessing the qualities of an adjective and a verb. There are two kinds of the Participle in the English language:

*Participle I (Present Participle)* with the suffix “ing”

And

*Participle II (Past Participle)* which is the third form of the verb.

Forms of Participle I:

	<b>Simple</b>	<b>Perfect</b>
<b>Active</b>	writing	having written
<b>Passive</b>	being written	having been written
	<i>Simultaneous action</i>	<i>Prior action</i>

Functions:

<ol style="list-style-type: none"> <li>1. The result of the experiment is shown in Fig.11</li> <li>2. A normal star was moving towards us.</li> </ol>	Part of Predicate
<ol style="list-style-type: none"> <li>1. The event occurred along the boundary of two of the moving plates that make up the Earth's crust.</li> <li>2. The energy released was equal to 500 nuclear bombs.</li> </ol>	Attribute
Reading the book the student found out many interesting things.	Adverbial Modifier

Notes:

1) Participle II of the verb “to give” used as adverbial modifier is translated as:

Given – если дано, если имеется, при условии.

Given the weight and the specific gravity of a body, you can calculate its volume.

2) Participle II of the verb “to follow” can be translated as следовать (совету), придерживаться (теории, метода, направления и др.).

The method followed by our professor was simple.

Метод, которого придерживался наш профессор, был простым.

## II. Participle Constructions:

1) *Objective-with-the-Participle*

Structure:

Noun in the Common Case

or

+ Participle in any form

Pronoun in the Objective case

E.g.

They watched the temperature gradually rising.

Они следили за тем, как постепенно повышалась температура.



## 2) *Subjective-with-the-Particle*

Structure:

Noun in the Common Case

or

+ Participle in any form

Pronoun in the Nominative Case

E.g.

Protons were observed leaving various elements.

Наблюдали, как протоны вылетают из разных элементов.

## 3) *Absolute Participial Construction*

Structure:

Noun in the Common Case

or

+ Participle in any form

Pronoun in the Nominative Case

The construction is almost always separated by a comma, whether it is in the beginning or end of a sentence. The Absolute Participial Construction has the function of an adverbial modifier.

Translation:

In the beginning of a sentence it is translated as an adverbial subordinate clause (обстоятельством придаточным) with the words “так как”, “если”, “когда”, “поскольку”.

E.g.

The signal given, the rocket starts immediately.

Когда (как только) дается сигнал, ракета сразу взлетает.

In the end of a sentence it is often translated as independent clause with the conjunctions “и”, “а”, “причем”.

E.g.

The sodium atom has eleven electrons, the eleventh one occupying a position outside of the second shell.

У атома натрия одиннадцать электронов, причем одиннадцатый занимает положение за пределами второй оболочки.

Note 1: The construction can be translated by “with”

E.g.: we continued our work, with our laboratory assistants helping us.

Мы продолжали свою работу, а наши лаборанты помогали нам.

Note 2: The Absolute participle Construction “other things (conditions, factors, etc.) being equal” is translated as “При прочих равных условиях.”

Do the following exercises paying attention to different forms of the Participle.

*1 Re-state the following sentences using participles instead of the subordinate clauses. Follow the model.*

The unifying force that binds all the fields of physics together is theory.

The unifying force *binding* all the fields of physics together is theory.

1. They deal with problems which involve physical energy. 2. They consider a physical reaction which involves a large number of particles. 3. He involved a method of determination which eliminated the previous causes of errors. 4. The neutron is a particle which has the mass of the hydrogen nucleus and a zero charge. 5. The fundamental constants are the quantitative links in the web of theory that binds physics together. 6. These experiments can yield information which concerns the overall correctness of the basic theories of physics. 7. Quantum electrodynamics is the quantum theory that describes the interactions of elementary particles with electromagnetic fields.

*2. Re-state the following sentences using participles in the passive form instead of the subordinate clauses. Follow the model.*

The results which are being generalized can be applied in our case.

The results *being generalized* can be applied in our case.

1. The principle which is being employed is similar to that used before. 2. We are familiar with the method of calculating which is being described here. 3. The experiments which are being designed can yield necessary information. 4. The new approach to the energy problem which is being referred to has proved to be correct. 5. The theoretical calculations which are being made to analyse collision phenomena are of greatly increased power. 6. The new experimental techniques which are being developed will be applied for this purpose. 7. Let's focus our attention on the complexity of the process which is being considered.

3. *Re-state the following sentences using the Participle instead of the subordinate clause. Follow the model.*

When the theory was put into mathematical form it seemed more beautiful.

*Being put* into mathematical form the theory seemed more beautiful.

1. When these data were collected they were of great use to us. 2. As these theories were abandoned they were soon forgotten. 3. When the theory was put forward it was accepted by scientists at once. 4. As these values were obtained by different investigators they lacked uniformity. 5. As the program of experimentation was conceived thoroughly it was a success. 6. As he was given an appropriate sample of analysis he could determine the properties of the substance easily. 7. When equations of motion were used in high-energy physics they have not had any significant success.

4. *Combine the sentences into one using the Present Participle. Follow the model.*

The equations of motion are necessary for low-energy physics. They should be used in high-energy physics as well.

*Being necessary* for low-energy physics the equations of motion should be used in high-energy physics as well.

1. Their concept was only philosophical. It differs from today's one. 2. This equipment is reliable. It is often used by the experiments. 3. That value was significantly in error. It had to be redetermined by new methods. 4. The mechanism of ionization by collision is simple in concept. It is easy to understand. 5. Explanation of these phenomena is a difficult problem. It has received a great deal of attention. 6. This formalism was so successful for classical physics. It might lead to a useful theory of particles. 7. The final method was a combination of the ideas and apparatus of several early experiments. It yielded good results. 8. Quantum electrodynamics is capable of making highly accurate numerical predictions. It is one of the most important modern theories of physics.

5. *Re-state the following sentences using the Participle instead of the subordinate clause. Follow the model.*

After the hypothesis had found support it was extended and clarified.

*Having found* support the hypothesis was extended and clarified.

1. After physicists had conducted the search they solved the problem.  
2. After he had received an excellent education he adopted a career of a scientist.  
3. After they had compared all these materials they were able to choose the best one for their purpose.  
4. After he had attended a course of lectures on the subject he got a better understanding of it.  
5. After they had considered that hypothetical experiment they could tell the difference between these two processes.  
6. After we had analyzed the concept of energy more thoroughly we saw that...  
7. After the scientists had used more powerful experimental tools and theoretical approaches they found new atomic states.

6. *Re-state the sentences. Use the Absolute Participle Constructions instead of the subordinate clause. Follow the model.*

As the information was pertinent and essential, we had to consider it at once.

*The information being pertinent and essential,* we had to consider it at once.

1. As the surface is homogeneous, such an agreement can be obtained.  
2. As these quantities are interrelated, we usually study them together.  
3. As the instruments were very sensitive, we obtained good results.  
4. As the results were of high accuracy, this value could be calculated more precisely.  
5. As the equipment was of simple construction, the students could use it in their work.  
6. As the repeated reading was the same, we could be sure of the data obtained.  
7. As these particles were of very high energy, we didn't know what to expect of them.

7. *Re-state the sentences. Use subordinate clauses instead of the Absolute Participle Constructions. Follow the model.*

The equipment showing good characteristics, we could use it for several purposes.

*As the equipment showed good characteristics, we could use it for several purposes.*

1. The results lacking precision, we had to employ another method. 2. The phenomenon demanding explanation, they began to study it thoroughly. 3. The instrument operating with high accuracy, we got satisfactory results. 4. The chamber leaking, we couldn't get vacuum. 5. The results confirming the theory, they considered the theory valid. 6. The substance exhibiting peculiar properties, we studied it with great interest. 7. The theory representing a radically different point of view, scientists didn't accept it at once.

*8. Re-state the sentences using the Absolute Participle Constructions instead of the second part of the sentences. Follow the model.*

He criticized the theory and his reasons were based on a thorough analysis of the facts.

He criticized the theory, *his reasons being based* on a thorough analysis of the facts.

1. Atoms are in a constant state of random movement and their speed is tremendous. 2. They performed the experiment and the results were in good agreement with the theoretical predictions. 3. A review of the main properties of the effect is given and the instrumental difficulties are presented. 4. They have invented a new device and its main advantages are simplicity and low cost. 5. He has created a new apparatus and its main disadvantages are low efficiency and short lifetime. 6. Several theories account for the observation and one of them exhibits exceptional ingenuity. 7. He performed hundreds of experiments and his results provided an explicit explanation of the phenomenon.

*9. Translate the following sentences into Russian. Pay attention to the Participle in different functions and constructions.*

1. Given the weight and the specific gravity of a body, you can calculate its volume. 2. Having evaluated the data, we shall next turn to their interpretation. 3. Following these early discoveries, a great many alloys have been discovered. 4. The data referred to in this paper are quite reliable. 5. Other liquids being too light, a barometer uses mercury. 6. We consider matter as being built up of atoms. 7. The problem

appeared solved when parallel discoveries were made. 8. All matter should be regarded as built up of atoms.

## Selection 2

### HOTHOUSE EARTH

#### Pre-reading

Is the earth getting warmer each year? If so, what effect will this have? What is the “greenhouse” effect, which some scientists say might destroy our planet? Will the burning of fossil fuels (coal, oil, natural gas) cause the earth to become a dead planet like Venus? The following article from Discover magazine discusses these and other questions.

#### Reading

##### “Hothouse earth”

#### Task I

##### Separating Fact from Opinion

As you read, try to separate facts from opinions. Notice that at times statements are qualified by subordinate clauses or by modals such as *may*, *might*, *could*, or *would* in such a way as to indicate that they are based on an opinion. On the other hand, phrases such as “it is clear” or “it is certain” or the quoting of exact statistics or measurements usually accompany statements based on facts. Scan the article to find one example of a fact and one of an opinion. Write them down here:

Fact: \_\_\_\_\_

\_\_\_\_\_

Opinion: \_\_\_\_\_

\_\_\_\_\_

Compare your answers with those of your classmates.

#### Hothouse Earth

*Carbon dioxide from fossil fuels will probably cause a “greenhouse effect” that warms the climate. But how drastically, and how soon?*

Headlines warned of rising temperature and melting polar ice caps. Television newscasters spoke grimly about palm trees sprouting on New York City’s Fifth Avenue and floods inundating Charleston, South Carolina, and Galveston, Texas, and other coastal cities.

These warnings appeared because scientists from the Environmental Protection Agency (EPA) and the National Academy of Sciences (NAS) issued reports on severe climate changes that could result from the “greenhouse effect”— the gradual warming of the atmosphere caused by an increase in carbon dioxide levels from the burning of fossil fuels.

The EPA report concluded that average global temperatures could start to rise within a few decades (some say the rise has already begun) and reach levels nine degrees Fahrenheit higher than today’s temperatures by the end of the next century. This, the experts said, could wreak havoc with global weather patterns, change annual amounts of rainfall, swell or dry up rivers, and raise the level of the seas. Farming, building, and the political stability of nations could be profoundly disrupted.

While admitting that this forecast was somewhat uncertain, the scientists warned against treating it as a cry of wolf. “We are deeply concerned about environmental changes of this magnitude,” the National Academy of Sciences said.

Although there is considerable debate over how severe the greenhouse effect will be, one thing seems certain: Carbon dioxide levels are on the rise. Measurements at the federal atmospheric observatory on Mauna Loa volcano in Hawaii show that the concentration of the gas in the atmosphere has risen steadily from 315 parts per million in 1958 to 340 part per million today. Air pockets trapped in glacial ice indicate that in the mid-nineteenth century, the concentration was only about 265 parts per million.

The evident culprit, scientists conclude, is the burning of coal, oil, synthetic fuels, and natural gas. These fossil energy sources release an estimated five and a half billion tons of carbon into the atmosphere each year as colorless, odorless CO<sub>2</sub> gas.

The increased carbon dioxide is probably not a threat to health, since normal indoor levels of the gas can run 1,000 parts per million or higher without apparent harm. However, it could profoundly affect the way the earth is heated by the sun. The sun’s energy strikes the earth principally in the form of visible light. As the earth heats up, it radiates the energy back into space, but at the much longer wavelengths of infrared light, or heat. Carbon dioxide lets the visible light pass through, but absorbs energy at infrared wavelengths. Thus, the more carbon dioxide in the atmosphere, the more the earth’s heat is blocked from escaping – just as



a blanket holds in the heat of a sleeper's body. In the late 1800s the Swedish scientists Svante Arrhenius gave the phenomenon its name when he compared it to the way glass traps air heated by the sun in a greenhouse.

Some scientists think the greenhouse effect already has begun: Average global temperatures have risen about one degree Fahrenheit in the past ninety years (with a dip from the mid-1940s to 1970). Others argue that the rise could be due to natural temperature fluctuations.

Nevertheless, most scientists agree that the accumulation of carbon dioxide has reached the point where an increase in temperature is imminent. The EPA study said average global temperatures probably would rise nearly four degrees by the twenty-first century—a total warming greater than that since the last ice age.

Rising temperatures would be just the beginning. The heating would shift global rainfall patterns, the EPA warned, bringing drought to some now-fertile areas and irrigating some deserts. Likewise, alpine glaciers and polar ice caps could melt substantially, causing the seas to rise two feet by the end of the century. Many low-lying communities could be flooded. Worst of all, the report said, the effect may be irreversible.

These grim conclusions were seconded, but in more cautious language, by the 496-page report released by the National Academy of Sciences. The NAS echoed some of the EPA's predictions, but saw in them "reason for caution, not panic". True, the study said, a four-degree heating would probably bring a 40 to 76 percent decrease in the amount of water in western rivers. But the NAS saw a silver lining in some of the dark clouds. A summer melting of the arctic ice pack, it pointed out, could open a land passage between the Atlantic and Pacific and encourage oil and gas exploration in the Arctic Ocean. Both agencies noted that increased carbon dioxide would make photosynthesis more efficient, increasing crop yields.

Even some of the good effects could have bad consequences, however. The Soviet Union and Canada, for example, could stand to benefit from a warming trend because it would make more of their frigid land farmable. And that fact might make them less likely to cooperate with any worldwide ban on fossil fuels. "Given that these two countries (and the former's allies) burn 25 percent of world coal," the NAS report said, "it is hard to see how a carbon dioxide control strategy can succeed without them."

Most scientist agreed with climate modeler James Hansen of the Goddard Institute of Space Studies in New York City that the report's predictions were "within the range of plausibility". That fact showed the faith that scientists now have in the computer models on which such studies are based. The EPA, for example, used separate computer simulations to predict world fuel consumption, the world distribution of carbon, and the temperature of the atmosphere. These models are extremely complex.

Running a climate model is like creating a world, says Jerry Mahlman, a meteorologist at Princeton's Geophysical Fluid Dynamics Laboratory. "first you turn on the sun, then you put in some oceans, add the atmosphere, and start the earth spinning." Climate modelers are not ready to call themselves God, he declares. "Our models don't have that kind of precision."

Even if the math is right, scientists can never be sure that they have included all variables and modeled them accurately. The biggest source of uncertainty in climate models is the oceans. Other important variables are clouds and gases like nutrius oxide, methane, ozone, and chlorofluorocarbons, which also contribute to the greenhouse effect.

Some critics of this research have maintained that the world already faces such great dangers from population growth, diminishing food supply, and the spread of nuclear weapons that the greenhouse threat seems mid by comparison. Others argue that since the earth has endured a long string of ice ages in the last two million to three million years, any warming is likely to be temporary. Even so, those who try to minimize the problem must also explain away the harsh conditions on the planet Venus. There, a runaway greenhouse effect is thought to account for surface temperatures approaching 900 degrees Fahrenheit; Venus's cloud-shrouded atmosphere is about 97 percent carbon dioxide.

Although few scientists think the earth will go the way of Venus, most agree that panning for the greenhouse problem should start soon. The EPA's John Hoffman says, for example, that the estimated \$210 million damage that would result from the flooding of Charleston, South Carolina, could be cut in half by such measures as revised city planning and dikes. Similarly, catch basins and reservoirs could be built to supplement water supplies in drying regions. As Hoffman puts it, "We feel carbon dioxide is a very serious thing, but we think there *is* time to do research, and there *is* time to adapt." Meanwhile, scientists will be

keeping an eye on the thermometer for the first definite sign that the greenhouse era has arrived.

## Post-Reading Activities

### Task II

#### Separating Fact from Opinion

On the basis of your reading of the article, tell which of the following statements are facts and which are opinions. If you are unsure about certain ones, scan the article for them and examine the context.

1. \_\_\_\_\_ Palm trees will some day be sprouting an New York City's Fifth Avenue.
2. \_\_\_\_\_ Average global temperatures have already began to rise because of the greenhouse effect.
3. \_\_\_\_\_ Carbon dioxide levels in the atmosphere have risen in the last twenty-five years.
4. \_\_\_\_\_ Carbon dioxide lets visible light pass through but absorbs energy at infrared wavelengths.
5. \_\_\_\_\_ The melting of alpine glaciers and polar ice caps will soon cause the seas to rise and flood many coastal areas.
6. \_\_\_\_\_ An increase of carbon dioxide to even double the amount presently in the air would probably not be damaging to health.
7. \_\_\_\_\_ In the late 1800s a Swedish scientists invented the term *greenhouse effect*.
8. \_\_\_\_\_ Higher temperatures throughout the world would have good as well as bad effects.
9. \_\_\_\_\_ Since the earth has endured numerous ice ages over the last few million years, any warming will be temporary.
10. \_\_\_\_\_ The atmosphere of the very hot planet Venus is about 97 percent carbon dioxide.

### Task III

#### Comprehending Complex Sentences

Study the following complex sentences from the article. Find the secondary clause(s) in each and decide how it changes the meaning of the main clause. Then, as a class or in small groups, check your understanding by selecting the phrase that best completes the explanation.

1. “Although there is considerable debate over how severe the greenhouse effect will be, one thing seems certain: Carbon dioxide levels are on the rise.” The severity of the greenhouse effect is:
  - a) one thing that seems certain
  - b) definitely on the rise
  - c) not acknowledged as a fact
  - d) not talked about very much
  
2. “Thus, the more carbon dioxide in the atmosphere, the more the earth’s heat is blocked from escaping.” The earth will get hotter if:
  - a) carbon dioxide increases
  - b) carbon dioxide decreases
  - c) the block becomes smaller
  - d) some atmosphere escapes
  
3. “Even if the math is right (in computer simulations), scientists can never be sure that they have included all variables and modeled them accurately.” To make a correct computer simulation, a scientists must...
  - a) include all variables
  - b) model the variables in the right way
  - c) do the mathematics accurately
  - d) all of the above
  
4. “Some critics of this research have maintained that the world already faces such great dangers from population growth, diminishing food supply, and the spread of nuclear weapons that the greenhouse threat seems mid by comparison.” Some scientists feel that the greenhouse effect...
  - a) is the greatest danger now facing the world
  - b) is less serious than other dangers at present
  - c) is the cause of several related dangers
  - d) is not really a danger at all at the moment

#### **Task IV**

##### **Stories behind Words**

1. All languages contain words or phrases with a special meaning taken from well-known stories or sayings. The preceding articles includes two such phrases.

In the text we are told that scientists warned against treating the forecast of rising temperatures as a “cry of wolf”. This phrase taken from a popular story about a young shepherd boy who liked to play tricks on his neighbors. He used to cry “Wolf! Wolf!” just for fun. At first everyone would come running to help him, but soon they realized that he was only fooling them. One day a wolf really did come, and he cried out: “Wolf! Wolf!” but no one came. So the wolf ate all his sheep. Now that you know the story, write down the meaning of a “cry of wolf”.

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2. According to the text the NAS basically agreed with the grim predictions of the EPA about the greenhouse effect, but saw “a silver lining in some of the dark clouds”. A common English saying often quoted to people with problems is “Every cloud has a silver lining”. This refers to the patch of sunlight often seen underneath dark storm clouds. Now that you know the saying, explain what it means to see “a silver lining in some of the dark clouds”.

### **Task V**

#### **Understanding Acronyms**

An acronym is a word formed from the first letters (or first few letters) of words in a set phrase. Acronyms are often used to refer to international or governmental agencies, such as WHO for the World Health Organisation, or SALT I for Strategic Arms Limitation Talks. Several technical words that have come into the English. Language in recent years are really acronyms, such as RADAR (Radio Detecting and Ranging). Write down the meaning of the following acronyms. If you do not know some of them, where should you go to find out?

#### **International Agencies**

NATO \_\_\_\_\_

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OPEC \_\_\_\_\_

---

UNESCO \_\_\_\_\_

---

**U.S. and Canadian Government Agencies**

NASA \_\_\_\_\_  
\_\_\_\_\_

CIDA \_\_\_\_\_  
\_\_\_\_\_

**Now Technical Words**

LASER \_\_\_\_\_  
\_\_\_\_\_

SCUBA \_\_\_\_\_  
\_\_\_\_\_

SNAFU \_\_\_\_\_  
\_\_\_\_\_

**Task VI**

**Talking it Over**

1. Explain the comparison made between carbon dioxide in the atmosphere and a blanket over a sleeper's body. (par.7)
2. Exactly what is the "greenhouse effect"?
3. How is a computer used to forecast environmental problems?
4. What other uses have you heard of for computer simulations?

**Task VII**

1. Write an essay discussing the following question:

Do you consider the greenhouse threat serious?

(Think what should be done to prepare for the possible rise in world temperatures?).

2. Before you start writing analyze and use an outline for an opinion essay.

Opinion essays are formal in style. They require your opinion on a topic which must be clearly stated and supported by reasons, It is necessary to include the opposing viewpoint in another paragraph.

A successful opinion essay should have:

1. an introductory paragraph in which you state the topic and your opinion

2. a main body which consists of one or two more paragraphs. Each paragraph should present a separate viewpoint supported by your reasons.
3. Another paragraph giving the opposing view point and reasons may be included
4. a conclusion in which you restate your opinion using different words.

### **Points to consider**

- First decide whether you agree or disagree with the subject of the topic and make a list of your points and reasons.
- Write well-developed paragraphs consisting of more than two sentences.
- Begin each paragraph with a topic sentence which summarises what the paragraph is about.
- Linking words should be used throughout your composition.

### **USEFULL LANGUAGE**

- **To express opinion:** I believe, In my opinion, I think, In my view, I strongly believe, The way I see it, It seems to me (that)
- **To list points:** In the first place, first of all, to start with, Firstly, to begin with
- **To add more points:** what is more, another major reason, also, furthermore, moreover, in addition to this/that, besides, apart from this, not to mention the fact that
- **To Introduce contrasting viewpoints:** It is argued that, People argue that, Opponents of this view say, There are people who oppose, Contrary to what most people believe, As opposed to the above ideas
- **To introduce examples:** for example, for instance, such as, in particular, especially
- **To conclude:** To sum up, All in all, All things considered, Taking everything into account

*Introduction*

.....

*Paragraph 1:*

*state the topic and your opinion clearly*

*Main Body*

.....

*Paragraph 2:*

*Viewpoint 1 and reason*

*Paragraph 3\*:*

*Viewpoint 2 and reason*

*Paragraph 4:*

*Give the opposing viewpoint and reasons*

*Conclusion*

.....

*Restate your opinion using different words*

\* You may include more viewpoints and therefore more paragraphs in the main body

**Task VIII**

**Pre-listening**

Answer the questions:

1. What is global warming? What can cause it?
2. How does the Sun affect our climate?
3. What is the greenhouse effect, and is it affecting our climate?
4. What can happen if people continue to cut down trees?

**Listening**

1. Now listen to the text to see if your answers were correct.
2. Fill in the gaps with appropriate words then listen to the text and check your answers.



## The Greenhouse Effect

If the earth was not surrounded by a (1) \_\_\_\_\_ blanket of air, it would be much too cold for (2) \_\_\_\_\_ habitation. Earth's (3) \_\_\_\_\_ acts as this blanket because it contains small amounts of carbon dioxide, methane, nitrous oxide, and other gases in the atmosphere known as (4) \_\_\_\_\_. These gases help retain (5) \_\_\_\_\_ through a (6) \_\_\_\_\_ process known as the greenhouse effect.

The greenhouse effect occurs when (7) \_\_\_\_\_ passes through the atmosphere and (8) \_\_\_\_\_ the Earth. Some of the light is (9) \_\_\_\_\_ and some is absorbed. The absorbed light warms the (10) \_\_\_\_\_ of the earth. The heated surface then radiates (11) \_\_\_\_\_ into the atmosphere where it is absorbed by greenhouse gases. These gases help regulate the temperature of the Earth.

(12) \_\_\_\_\_ the burning of large amounts of coal, oil and natural gas, the amount of greenhouse gases in the atmosphere has (13) \_\_\_\_\_ increased over the last 300 years. For instance, carbon dioxide, (14) \_\_\_\_\_ as CO<sub>2</sub>, has increased 300 (15) \_\_\_\_\_ since 1750.

Trees (16) \_\_\_\_\_ CO<sub>2</sub> from the air, as part of their (17) \_\_\_\_\_ processes. As human beings cut down forests, the capacity of (18) \_\_\_\_\_ to remove CO<sub>2</sub> from the air is (19) \_\_\_\_\_. Scientists are concerned that as we continue to burn large (20) \_\_\_\_\_ of fossil fuels and (20) \_\_\_\_\_ our forests an (21) \_\_\_\_\_ greenhouse effect will occur resulting in an increase of the world's (22) \_\_\_\_\_ temperature known as (23) \_\_\_\_\_.

A warming of only a few degrees could cause a number of environmental problems, including the melting of the polar (24) \_\_\_\_\_, causing ocean (25) \_\_\_\_\_ to rise and flooding (26) \_\_\_\_\_ areas.

### **After listening**

Have you found out any new information on this topic?

### **Supplementary texts**

Read the text and tell what the relationship will be between human and smart robots in the future. How will it influence human life?

### **Robots take over**

People create smart robots, which turn against us and take over the world. Yawn. We have seen this in movies, TV, and comic books for decades. After all these years, look around and still – no smart robots. Yet Hans Moravec, one of the founders of the robotics department of Carnegie Mellon University, remains a believer. By 2040, he predicts, machines will match human intelligence, and perhaps human consciousness. Then they will get even better. He envisions an eventual symbolic relationship between human and machine, with the two merging into “postbiologicals” capable of vastly expanding their intellectual power. Marvin Minsky, an artificial-intelligence expert at MIT, foresees a similar future: People will download their brains into computer-enhanced mechanical surrogates and log into nearly boundless files of information and experience. Whether this counts as the end of humanity or the next stage in evolution depends on your point of view. Minsky’s vision might sound vaguely familiar. After the first virtual-reality machines hit the market place around 1989, feverish journalists hailed them as electronic LSD, trippy illusion machines that might entice the user in and then never let him out. Sociologists fretted that our culture, maybe even our species, would wither away. When the actual experience of virtual reality turned out to be more like trying to play Pac-Man with a bowling ball taped to your head, the talk died down. To his credit, Minsky recognizes that the merger of human and machine lies quite a few years away.

Read the following text and speak about possible dangerous consequences of genetic engineering.

## **Biotech Disaster**

While we are extinguishing natural species, we are also creating new ones through genetic engineering. Generally modified crops can be hardier, tastier, and more nutritious. Engineered microbes might ease our health problems. And gene therapy offers an elusive promise of fixing fundamental defects in our DNA. Then there are the possible downsides. Although there is no evidence indicating genetically modified foods are unsafe, there are signs that the genes from modified plants can leak out and find their way into other species. Engineered crops might also foster insecticide resistance. Longtime skeptics like Jeremy Rifkin worry that the resulting superweeds and superpests could further destabilize the stressed global ecosystem. Altered microbes might prove to be unexpectedly difficult to control. Scariest of all is the possibility of the deliberate misuse of biotechnology. A terrorist group or rogue nation might decide that anthrax isn't nasty enough and then try to put together, say, an airborne version of the Ebola virus. Now there's a showstopper.

## **Noise Pollution**

### **Task I**

Read the text and choose which of the following statements best summarizes it:

- a. People are apathetic towards noise.
- b. Noise pollution is worse in industrial societies than in non-industrial societies.
- c. Noise pollution is an important ecological problem.
- d. Noise can have harmful psychological effects.

A well-documented body of information exists showing that noise can adversely affect humans in both psychological and physiological ways. Hearing losses in particular occupations such as boiler-making and construction work are well known. In fact, however, we all find hearing more difficult as we age. Young ears can distinguish a wide range of sounds from low to very high frequencies, while older ears lose the ability to distinguish high-pitched sounds. A comparison of some industrialized versus non-industrialized peoples suggests that this hearing loss may not be a requisite accompaniment of old age.

Furthermore, a closer inspection of other data reveals economic effects. For instance, an increased turnover in property has been

observed in noisy areas near airports. Job performance can be adversely affected by loud noise, especially if accuracy and mental effort are involved. The use of outdoor areas for conversation is not possible for an estimated 5 to 10 million people who live or work in urban areas. When interference with television or speech or sleep is included, as many as 22 to 44 million people can be said to have lost part of the use of their homes and grounds because of noise.

Thus noise pollution is a serious environmental concern. The apathetic attitude toward noise should be overcome; vigorous efforts should be made to alert people to the grave effects which may stem from an excessively noisy environment.

**Task II**

Study the opinions about noise pollution on the left and the statements on the right. Match each statement to the opinion it supports.

OPINIONS	SUPPORTING STATEMENTS
1. Reducing noise would be too expensive. 2. A reduction in noise would justify the cost. 3. Noise reduction is an urgent necessity. 4. We need to know more before any action can be taken. 5. It is vital that people should be given information on the costs and effects of noise pollution.	a. More research needs to be done on noise reduction and effects. b. At least 1 million would be required to equip jet aircraft with noise control devices and this would be insufficient to make noise levels acceptable. c. If the noise of aircraft were reduced there would be numerous economic benefits. d. Measures must be taken to reduce noise pollution before it is too late. e. The public should be alerted to the dangers and economic costs of noise pollution.

## Grammar Commentaries

### *The Gerund*

In English, there is another “ing” form for the verb- the Gerund. The Gerund is a non-finite form of the verb having the attributes of both nouns and verbs. The forms of the Gerund are the same as those of the Participle.

### *Forms of the Gerund:*

	Simple	Perfect
Active	<i>writing</i>	<i>having written</i>
Passive	<i>being written</i>	<i>having been written</i>
	Simultaneous action	Prior action

### *Functions:*

Falling is a case of motion at constant acceleration.	Subject
I like reading . He insisted on taking part in the conference.	Object
On coming home he always has a rest.	Adverbial Modifier
There is no necessity of making any corrections.	Attribute

Do the following exercises paying attention to different forms of the Gerund.

### *1. Re-state the sentences using the Gerund. Follow the model.*

It is not difficult to observe these phenomena in nature.  
Observing these phenomena in nature is not difficult.

1. It is necessary to study the problem thoroughly. 2. It is necessary to confirm these predictions. 3. It is necessary to distinguish between these two processes. 4. It is easy to demonstrate the truth of this hypothesis. 5. It is sometimes impossible to obtain direct evidence for a theory. 6. It is important to consider the average density of this substance. 7. it is possible to observe the phenomenon in the laboratory.

### *2. Complete the following sentences using the Gerund. Make use of the suggested elements. Follow the model.*

What is your idea of ... (to solve the problem)

What is your *idea of solving* the problem?

1. He avoids... (*to work with these materials*). 2. We intend ... (*to study the new phenomenon thoroughly*). 3. He thinks of ... (*to develop the theory*). 4. He insists on ... (*to transmit the information by radio*). 5. he is interested in ... (*to discuss such problems*). 6. There were several reasons for ... (*to do that*). 7. She has no experience in ... (*to carry out such experiments*). 8. We take every opportunity of ... (*to go to this scientist's lectures*). 9. His task consists in ... (*to provide the necessary materials for the experiment*).

3. Say that your friend is responsible for doing the following. Follow the model.

To construct a new device for this experiment

My friend *is responsible for constructing* a new device for this experiment.

1. to publish these papers on time. 2. to provide information on the subject. 3. to test the theory experimentally. 4. to account for the peculiarities of the new system. 5. to collect materials on the problem. 6. to consider the problem from this aspect. 7. to study the new observations thoroughly.

4. Say what your chief insists on doing. Use the Gerund. Follow the model.

to test the accuracy of this instrument.

My chief *insists on testing* the accuracy of this instrument.

1. to treat the subject thoroughly. 2. to adopt the new methods. 3. to apply the new schematic model in this case. 4. to put the new device into operation. 5. to analyse the new data immediately. 6. to attach more importance to these facts. 7. to make a list of those present at the meeting.

5. Say how a student can increase his knowledge of physics. Use the Gerund. Also make use of the suggested elements. Follow the model.

to take an interest in the subject.

A student can increase his knowledge of physics *by taking* an interest in the subject.

1. to attend lectures on physics regularly. 2. to study the subject hard and systematically. 3. to read literature on physics in foreign languages. 4. to study the ways in which the facts of science are obtained. 5. to learn to arrange and use the data obtained. 6. to exchange ideas with other students. 7. to use various textbooks and reference-books. 8. to study different viewpoints on the same phenomena.

6. *Say what your chief insists on being done. Use the Gerund. Follow the model.*

To use up-to-date equipment in our laboratory.

My chief insists on *up-to-date equipment being used* in our laboratory.

1. to do research work in the laboratory. 2. to check all these figures once more. 3. to complete the major part of this work next week. 4. to advance a good explanation for these facts. 5. to test the new equipment carefully. 6. to give substantial information on the new invention. 7. to invent a more sensitive apparatus for this purpose.

7. *Combine each of these pairs of sentences using the Gerund. Follow the model.*

*Their having participated* in that conference is of great importance.

1. They have found a solution to the problem. And that is of great value.  
2. He has contributed extensively to that theory. And that is known.  
3. He had great difficulties with that problem. And that is known.  
4. They have simplified the procedure of the experiment. And that is of great use.  
5. He has suggested an ingenious solution to that problem. And that is important.  
6. She has used an ingenious scheme for her experiment. And that is valuable.  
7. He proposed a unique procedure of carrying out this experiment. And that is of great interest.

8. *Translate the following sentences into Russian. Pay attention to the Gerund in different functions.*

1. Measuring resistance is necessary in many experiments.
2. Would you mind showing one more slide?
3. He could not help joining the discussion.
4. There is one more point worth mentioning.
5. He had to give up experimenting.
6. The ability of a solid to resist being altered in shape is termed rapidly.
7. Calcium and sodium are alike in being very soft.
8. In making observations extreme care to avoid errors is necessary.
9. I am surprised at his being awarded the prize.
10. So far only the quantum theory has succeeded in giving a satisfactory explanations.



### **Selection 3**

#### **ENERGY CRISIS**

We are all aware of the energy crisis. And we are constantly being urged to limit our use of this precious resource. But how many of us have ever stopped to think about the root of the problem? The following articles discuss this and other related questions.

#### **Pre-reading**

Think over the questions:

1. What are the main energy sources in Siberia?
2. Can solar energy be used in Siberia?
3. Are there nuclear power stations in Siberia? What do you know about the advantages and disadvantages of nuclear power?
4. What is this room heated by?

#### **Reading**

##### **Task I**

Look through the text and give it a title.

The following glossary can help you:

consumption – (here):the amount of oil, electricity, etc. that is used

ancestor – a member of your family who lived a long time ago

finite – having a limit

beneficial – advantageous

to run out - to be left without

threat – dangerous state

available – usable, at hand, accessible

solution – act of solving problem

urgent – calling for prompt attention

fossil fuels – coal, oil, etc.

In technologically advanced societies, the enormous consumption of energy per head is one aspect of the ever-increasing pressure man is placing on his environment. Early industrial man used three times as much energy as his agricultural ancestor; modern man is using three times as much as his industrial ancestor. If present trends continue, the rate of consumption will have tripled again by the nearest future. The

problem lies in the fact that most of our current energy sources are finite. The hard truth is that a day will come when there is little or no exploitable coal, oil, or natural gas anywhere. The sharp rise in the price of oil over the last decade has been unpleasant for many parts of the world but in the long run it is beneficial, partly because it discourages waste and partly because it has forced many nations to seek ways of developing better and more permanent sources of energy.

Nuclear power has often been presented as the only means of “saving” our standard of living when the fossil fuels like oil, coal, and gas run out. Nuclear power is attractive in that we have already developed the technology to exploit the energy stored in the atom. In addition, small amounts of fuel release enormous amounts of energy. However the problems of nuclear power have become increasingly clear in the last decade. These range from the threat of pollution to the danger of an accidental explosion and these make nuclear power a less desirable solution to the energy crisis. Furthermore, to completely replace fossil fuels by nuclear power would require the construction of about fifty times the present number of nuclear power stations by the nearest future, which is beyond our resources.

The role of alternative energy sources, such as solar energy, wave power and wind power, has been researched in many countries. Studies in the USA have suggested that solar energy could provide 20% of US heating and cooling requirements by the end of the century. The same research indicates that in several countries, including Britain, wind power might be of value. Wave power could also be an important source of electrical energy.

Of these sources, solar energy in the northern hemisphere is most available when it is least needed- in the middle of the day and in summer. Moreover existing methods of energy transfer for solar power are relatively insufficient. If long-term storage could be devised so that energy available in peak periods of supply could be stored for use in peak periods of demand, much greater use could be made of solar power. In contrast, wave and wind power availability match the curve of energy demand i.e. the winds are strongest and the tides are highest during the winter. For the present, wind power is by far the cheapest of these alternative sources. It requires, however, aerogenerators, as big as electricity pylons, which would be sited along coastlines, where they could be very ugly.

Using energy from waves is still in its experimental stages. In the long run, it is likely to be dearer than wind power but may still be cheaper than nuclear power.

Some people argue that the huge coal reserves in some countries make the search for new sources of energy less urgent. But this is not facing the facts. They forget that new demands will almost certainly be made on our coal reserves as a source of plastics. Coal is much too valuable to burn.

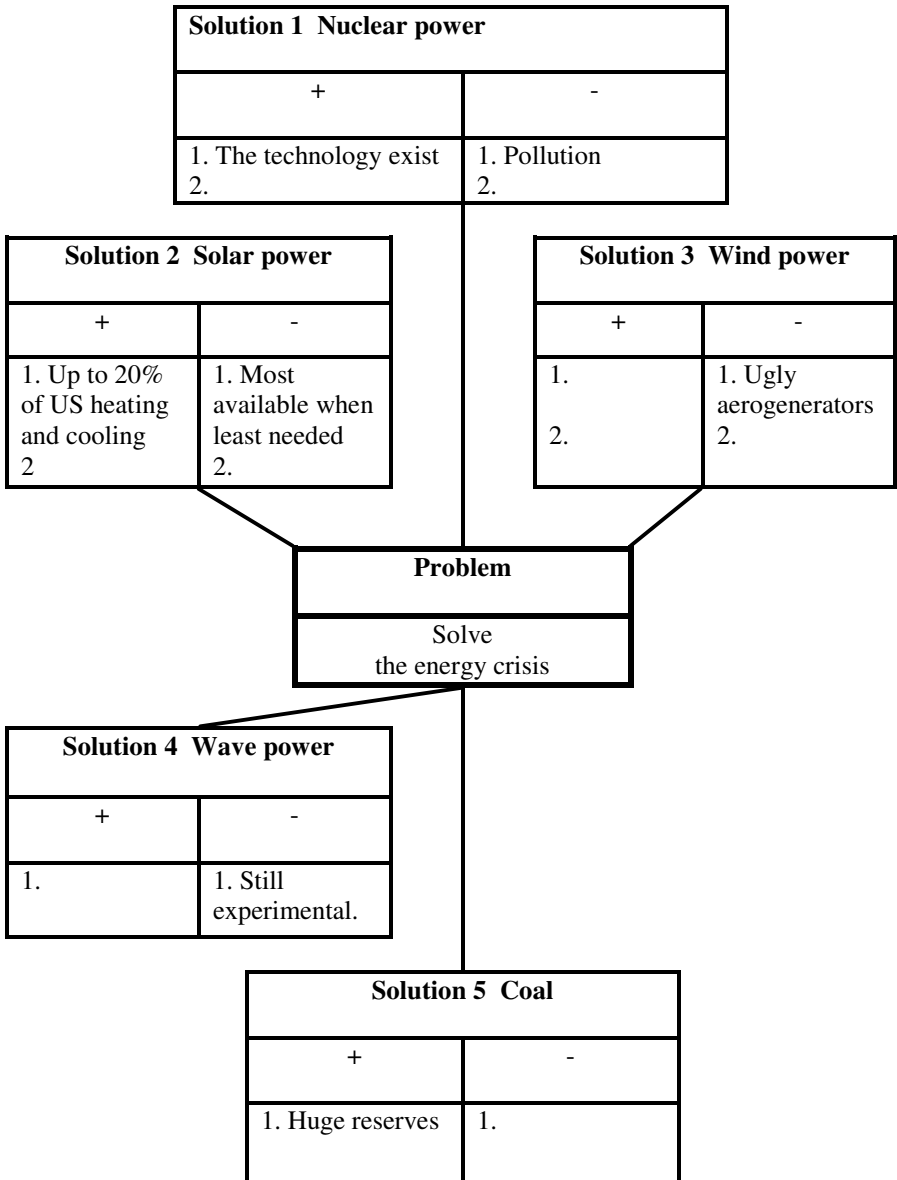
## **Task II**

Comprehension check

Answer the following questions:

1. Why are people worried about the rate of energy consumption in the world?
2. Why is the sharp rise in the price of oil beneficial in the long run?
3. Why is nuclear power a good solution to the energy crisis?
4. Does it have any disadvantages?
5. What are the particular features of solar energy?
6. What is the cheapest alternative energy source?
7. How actively is wave power used now?
8. What new demands will be made on our coal reserves?

**Task III** Read the text again, then use the information it contains to complete the diagram illustrating the problem of the energy crisis.



## **Task IV**

### **Talking it Over**

1. What is your personal opinion on the use of nuclear power?
2. Why has Chernobyl accident led many people to question building and making use of nuclear power plants?
3. Why does the problem of nuclear waste call for further investigation?
4. Could the world do without using nuclear power?

## **Task V**

Write an opinion essay discussing the advantages of the alternative source of power which you think particularly suitable for Russia.

## **Supplementary Texts**

### **I. Nuclear Energy**

#### **Task I**

Read the text and discuss the following:

2. advantages and disadvantages of nuclear power
3. the risk of the disposal of radioactive waste
4. the diagrams given after the text

Many people who are concerned about the rapid consumption of our fossil fuel resources, about the environmental consequences of this consumption, and about the uncertainties associated with many of the alternatives, have assumed that power from the nuclear fission (splitting) of uranium will provide the answers. Nuclear fission, it has been claimed, will be a cheap, clean, and almost inexhaustible source of power. These claims may yet prove to be true, but serious difficulties remain to be solved. The fuel of fission reactors is relatively cheap, but construction costs are high compared to those for power plants operating on fossil fuel. This is perhaps not too important in the United States, where energy is already so cheap comparison to other expenditures that we use it wastefully, but the cost factor may be very important in the poor countries. Also, fission plants are generally economically attractive only in very large sizes, and most small UDCs cannot absorb so much power in one place. Networks of transmission lines, enabling a few plants to serve large geographic areas, are expensive, and inevitable plant breakdowns are less disruptive if there are many small plants rather than a few large ones.

Another difficulty is that today's fission reactors use uranium very inefficiently, managing to extract only 1 or 2 per cent of the potential energy of this fuel the breeder reactors of the future will do much better in this respect. Contrary to a widespread impression, breeder reactors do not give us something for nothing, but they will be able to extract 40 to 70 per cent of the energy in raw uranium. These reactors will probably not be ready for extensive commercial use until the late 1980s. Once they have been perfected ( and this includes the assumption that their considerable environmental hazards can be held to acceptable levels), breeder reactions could provide mankind with a level of electricity consumption much larger than today's for millennia.

The disposal of radioactive waste. The spent fuel elements from any reactor are highly radioactive and contain fission and other products with half lives ranging from a few seconds to many thousands of years.

It should be realized, however, that the radiation (of whatever sort) emitted by a particular element is caused by the process of its radioactive decay. The elements with a high rate of radioactive decay (short half lives) therefore emit very intense radiation, while those with low rates of decay (long half lives) emit only low levels.

After chemical separation, some of the elements (uranium and plutonium) are recycled for further use; the remainder have to be stored or disposed of in some way. The highly active concentrated wastes in liquid form are at present stored in stainless steel double-walled tanks for additional safety. There would be obvious advantages from the point of view of long-term storage if the concentrates could be converted to a solid, and a process has been worked out for turning them into an insoluble glass.

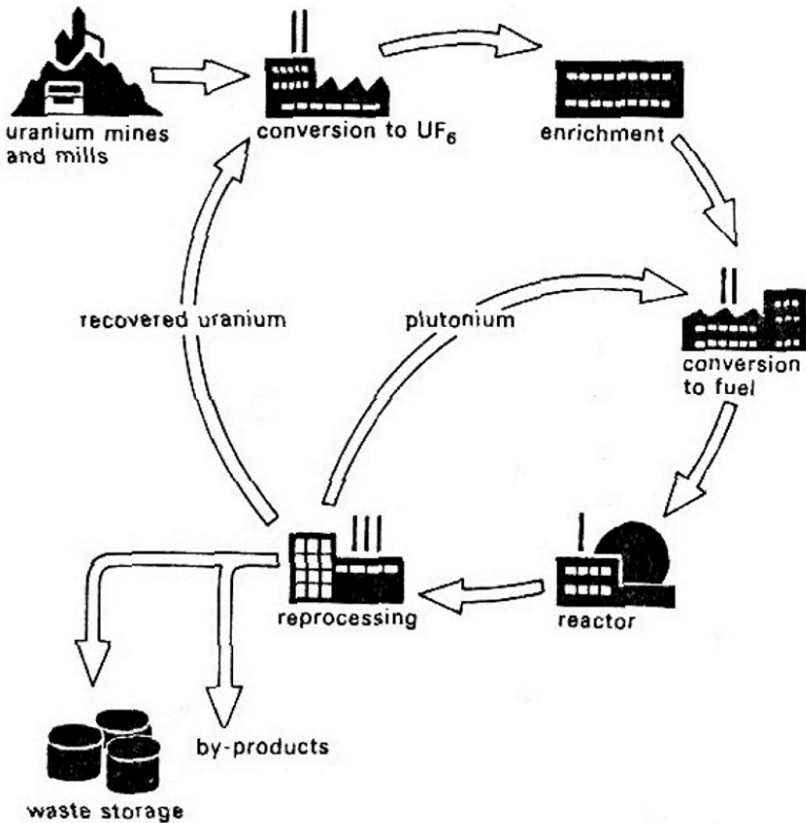
There is clearly no immediate need to reach a decision on long-term disposal, and we agree with the present policy of continuing the present arrangements until all aspects of the various alternative methods can be properly assessed.

However, in the absence of some better idea, the proposal to fill stainless steel containers with glass and bury them deep in stable geological strata would seem to us an acceptable solution. There are areas in the earth's crust where the natural levels of radioactivity are already high, and as in so many other instances, the additional radiation due to man's efforts would be insignificant compared with natural sources.

## Task II

Analyze the diagram and speak on the processes given in it.

To comment on the diagram use the text and the following expressions: according to the diagram, it is evident, to be described, the arrow shows.



### Task III

Translate paragraph 2 in writing.

Choose the best translation and discuss it.

## II. What France does: Concrete actions toward the responsible development of nuclear energy.

Read the text and answer the following questions:

1. How does France support the International Atomic Energy Agency (IAEA) in the field of peaceful nuclear applications?
2. How does France promote access for all partners to civil nuclear energy?
3. How does France help its European partners and Russia to have security of fuel supplies?
4. How does France control sensitive technologies?
5. Why is international cooperation essential in the development of nuclear technologies?

France actively supports the **International Atomic Energy Agency's (IAEA) technical cooperation programme** and acknowledges its positive contribution for development. In addition to its participation in the technical cooperation fund, it also supports several actions via voluntary contributions (Placements for trainees, training expert assignments, financing of major projects, particularly in the fields of research into cancer treatments and fight against insects transmitting malaria).

France has signed many bilateral cooperation agreements in the field of peaceful uses of nuclear energy: **8 since 2008**. These agreements cover **all geographical areas**.

Such agreements form the legal framework required for any long-term partnership and aim at enabling the development of cooperation under the best **safety, security and non-proliferation conditions**. The procedures for transfer of materials and equipment provided by France to third parties are designed to avoid any misuse, and include



a specific commitment to use for peaceful, non-explosive purposes.

In order to initiate full bilateral cooperation, France encourages its partners to complete their **comprehensive safeguards agreement** with an **additional protocol** and to adhere to **all relevant international agreements in the field of nuclear energy** (Conventions in the field of nuclear safety, Convention on the physical protection of nuclear materials, Convention on civil nuclear responsibility, etc.).

France intends to develop its international cooperation in **complete transparency**, and in strict compliance with its international obligations. All agreements are **subject to approval from the European Commission**, in accordance with the terms of the EURATOM treaty, and published once ratified

France has set up a specialist entity, the **AFNI (Agence France Nucléaire International - French International Nuclear Agency)**, to assist countries wishing to access nuclear energy with the implementation of the infrastructures necessary for the safe development of civil nuclear energy.

France made a commitment, in conjunction with its European partners, to the EU's financial (up to 25 million Euros) and technical contribution to the creation of a **Low enriched uranium bank under the auspices of the IAEA**. France also supported the Russian initiative related to the creation of a LEU bank. These projects must allow countries which fully meet their non-proliferation obligations to have security of fuel supplies.

France considers that a clear distinction should be made between:

- the supply of reactors based on non-proliferating technologies (Light Water Reactors) and the supply of the fuel required for the operation, which should be facilitated,
- and the export of enrichment and reprocessing technologies, which

should not be forbidden , but strictly controlled due to the sensitive nature of these technologies vis-a-vis non-proliferation commitments.

France considers that international cooperation is essential for the **design of a new generation of safer, more competitive reactors, which will be more resistant to proliferation and generate less long-term radioactive waste.** France participates in the Multinational Design Evaluation Programme (MDEP), which aims to improve the efficiency and effectiveness of the safety evaluation procedure when reviewing new reactor designs. It takes an active part to multilateral initiatives in this field: Generation IV International Forum, IAEA's International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO), GNEP initiative (Global Nuclear Energy Partnership). Regarding fusion technology, the ITER (International Thermonuclear Experimental Reactor) reactor will be located on the European site of Cadarache, in France.

### **Home task.**

#### **Role play: A Conference on Energy Crisis**

(A few students are given short reports to make them at the conference on "Energy crisis". Some students are assigned with different roles. The others must revise the topic on p. 37 to take an active part in the discussion.)

### **III. Preparing for the conference.**

Have you ever taken part in the conference?

When and where did it take place?

Was it a successful experience?

Did you give your talk in English or in Russian?

Here are some useful hints on how to conduct a public meeting, how to open and close the debate, how to take an active part in a scientific discussion.

1. Keep to the point, please.
2. This point is not under discussion today.
3. May I draw your attention to the fact that....
4. The discussion is declared closed.

5. I would like to comment on what Mr. Green said.
6. I must disagree with....
7. Could you tell a little about your experiments with....
8. Are you familiar with our studies on....
9. I can't answer your question directly.
10. I agree completely with what you say.
11. I'd like to welcome you all to this public meeting.
12. I asked the floor to support the idea.
13. I have some doubts about that.
14. I do not accept the last argument.
15. In closing this conference....
16. It was a great pleasure for us to participate in this conference....
17. It is a great pleasure for me to open....
18. I have the honor and pleasure today of greeting you...

III. Fill in the following table using the phrases given above:

Opening	Scientific discussion	Closing

#### IV. The scenario of the conference on “Energy Crisis”

“Good evening, and welcome again to the “Michael Parkhurst Talk about”. In tonight’s programme, we’re looking at the problem of energy. The world’s energy resources are limited. Nobody knows exactly how much fuel is left, but pessimistic forecasts say that there is only enough coal for 450 years, enough natural gas for 50 years and that oil might run in 30 years. Obviously we have to do something, and we have to do it soon!

I’d like to welcome our first guest, Professor Marvin Burnham of New England Institute of Technology. Professor Burnham.”

“ Well, we are in an energy crisis and we will have to do something quickly. Fossil fuels (coal, oil and gas) are rapidly running out. The tragedy is that fossil fuels are far too valuable to waste on the production of electricity. Just think of all the things you can make from oil! If we don’t start conserving these things now, it will be too late. And nuclear power is the only real alternative. We are getting some electricity from nuclear power stations already. If we invest in further research now,

we'll be ready to face the future. There's been a lot of protest lately against nuclear power-some people will protest at anything- but nuclear power-stations are not as dangerous as some people say. It's far more dangerous to work down a coal-mine or on a North Sea oil-rig. Safety regulations in power-stations are very strict.

If we spent money on research now, we could develop stations which create their own fuel and burn their own waste. In many parts of the world where there are no fossil fuels, nuclear power is the only alternative. If you accept that we need electricity, then we will need nuclear energy. Just imagine what the world would be like if we didn't have electricity – no heating, no lighting, no transport, no radio or TV. Just think about the ways you use electricity every day. Surely we don't want to go back to the Stone Age. That's what will happen if we turn our backs on nuclear research.”

“Thank you, Professor. Our next guest is a member of CANE, the Campaign Against Nuclear Energy, Jennifer Hughes.”

“Right. I must disagree totally with professor Burnham. Let's look at the facts. First, there is no perfect machine. I mean, why do airplanes crash? Machines fail. People make mistakes. What would happen if there were serious nuclear accident? And an accident must be inevitable-sooner or later. Huge areas would be evacuated, and they could remain contaminated with radioactivity for years. If it happened in your area, you wouldn't get a penny in compensation. No insurance company covers nuclear risks. There are accidents. If the nuclear industry didn't keep them quiet, there would be a public outcry. Radioactivity causes cancer and may affect future generations.

Next, nuclear waste. There is no technology for absolutely safe disposal. Some of this waste will remain active for thousands of years. Is that what you want to leave to your children? And their children's children? A reactor only lasts about 25 years. By the year 2000 we'll have “retired” 26 reactors in the UK.

Next, terrorism. Terrorists could hold the nation to ransom if they captured a reactor. In the USA the Savannah River plant, and Professor Burnham knows this very well, lost (yes, “lost”) enough plutonium between 1955 and 1978 to make 18 (18!) atom bombs. Where is it? Who's got it? I consider that nuclear energy is expensive, dangerous, unnecessary. But Dr Woodstock will be saying more about that.”

“Thank you Jennifer. Now I’m very pleased to welcome Dr Catherine Woodstock. She is the author of several books on alternative technology.”

“Hello. I’d like to begin by agreeing with Jennifer. We can develop alternative sources of power, and unless we try we’ll never succeed. Instead of burning fossil fuels we should be concentrating on more economic uses of electricity, because electricity can be produced from any source of energy. If we didn’t waste so much energy, our resources would last longer. You can save more energy by conservation than you can produce for the same money. Unless we do research on solar energy, wind power, wave power, tidal power, hydroelectric schemes etc, our fossil fuels will run out, and we’ll all freeze or starve to death. Other countries are spending much more than us on research, and don’t forget that energy from the sun, the waves and the wind last for ever. We really won’t survive unless we start working on clearer, safer sources of energy.”

“Thank you very much, Dr Woodstock. Our final speaker, before we open the discussion to the studio audience, is Charles Wicks, MP, the Minister of Energy.”

“I’ve been listening to the other speakers with great interest. By the way, I don’t agree with some of the estimates of world energy reserves. More oil and gas is being discovered all the time. If we listened to the pessimists (and there are a lot of them about) none of us would sleep at night. In the short-term, we must continue to rely on the fossil fuels-oil, coal and gas. But we must also look to the future. Our policy must be flexible. Unless we thought new research was necessary, we wouldn’t be spending money on it. After all, the Government wouldn’t have a Department of Energy unless they thought it was important. The big question is where to spend the money – on conservation of present resources or on research into new forms of power. But I’m fairly optimistic. I wouldn’t be in this job unless I were an optimist!”

## **Selection 4**

### **ENVIROMENT**

The condition of the environment is one of the most important long-term problems facing the continent of Europe today. From east to west, people and governments are trying to come to terms with the environmental damage wrought by heavy industrialization and population growth. Although the damage is more severe in the East, the issue is complicated by the fact that the environment does not respect national borders; pollution in one country is often carried either through air or water currents to other countries. Consequently, pollution is a regional, not national, problem.

Dealing with environmental damage and initiating programs to protect the environment is neither cheap nor easy. The countries of Europe will be challenged to deal with the damage that they have already incurred, in addition to preventing future damage.

### **A City is Dying**

#### **Pre-reading**

1. Try to enumerate all the problems that a big city can face during its development.

Write them down.

#### **Task I**

Read the text as quickly as you can and tell what problems Athens has.

Stinking buses, their passengers pale and tired, jam the crowded streets. Drivers shout at one another and honk their horns. Smog smarts the eyes and chokes the senses. The scene is Athens at rush hour. The city of Plato and Pericles is in a sorry state of affairs, built without a plan, lacking even adequate sewerage facilities, hemmed in by mountain and the sea, its 135 square miles crammed with about 3.7 million people. Even Athens' ruins are in ruin: sulfur dioxide eats away at the marble of the Parthenon and other treasures on the Acropolis. As Greek Premier Constantine Karamanlis once said, "The only solution for Athens would be to demolish half of it and start all over again."

So great has been the population flow toward the city that entire hinterland villages stand vacant or nearly so. About 120,000 people from

outlying provinces move to Athens every year, with the result that 40% of Greece's citizenry are now packed into the capital. The migrants come for the few available jobs, which are usually no better than the ones they fled. Probably at the current rate of migration, Athens by the year 2015 will have a population of 6 million, more than half the nation.

Aside from overcrowding and poor public transport, the biggest problems confronting Athenians are noise and pollution. A government study concluded that Athens was the noisiest city in the world. Smog is almost at killing levels: 180-300 mg of sulfur dioxide per cubic meter of air, or up to four times the level the World Health Organization considers safe. Nearly half the pollution comes from cars. Despite high prices for vehicles and fuel (\$6.5 per gallon), nearly 100 000 automobiles are sold in Greece each year; 3000 driver's licenses are issued in Athens monthly.

After decades of neglect, Athens is at last getting some attention. In March a committee of representatives from all major public service ministries met to discuss a plan to unclog the city, make it livable and clean up its environment. A save-Athens ministry, which will soon begin functioning, will propose heavy taxes to discourage in-migration, a minimum of \$5 billion in public spending for Athens alone, and other projects for the countryside to encourage residents to stay put. A master plan that will move many government offices to the city's fringes is already in the works. Meanwhile, more Greeks keep moving into Athens. With few parks and precious few oxygen-producing plants, the city and its citizens are literally suffocating.

(Adapted from an article in *Time* magazine.)

*stinking*: smelling very bad, having a very unpleasant odour.

*sewerage*: a system that moves the human waste from toilets out of the city, to a place where it is treated chemically.

*unclog* the city: stop it from being so crowded

## **Task II**

### **Summary skills**

Fill in as many of the empty spaces as you can in the table below. Look at the text carefully to do this. Put a question mark if you are not sure of something; it is not necessary to fill in all the spaces. When you have finished, compare your answers with those of the people around you.

<i>Problem</i>	<i>Cause(s)</i>	<i>Proposed solution(s)</i>
1. Overcrowding	-Athens' geography	- Moving of government offices
2. Poor public transport	- High rate of migration?	-Demolish S of Athens, start again
3.		
4.		

### Task III

#### Guessing unknown words

Three things can help you guess words you do not know:

- what you find in the text,
- what you know about similar words, and
- what you know about the word.

#### Guess the probable meaning of each word.

1. *lacking*: This sentence is describing the problems of Athens; so “lacking adequate sewerage facilities” probably means.....  
adequate sewerage facilities.
2. *crammed*: Because this is a sentence about Athens' problems, 3-7 million people is probably considered a lot of people for 135 square miles. So *crammed* probably means .....
3. *fled*: The new jobs in Athens are usually no better than the old jobs the migrants .....
4. *confronting*: “The problems confronting Athenians’ are the problems Athenians .....
5. *decades*: It is not easy to guess exactly what this word means, but “at last “ tells you that it means .....
6. *stay put*: This means not to .....
7. *is already in the works*: This means has already .....



## Task IV

### Facts and figures

Who will be the quickest to answer these questions?

1. What population will Athens have by the year 2015?
2. How many driver's licenses are issued in Athens every year?
3. How many people per square mile were living in Athens when the article was written?
4. What is the present population in Greece?
5. What is the level of sulfur dioxide considered safe by the World Health Organization?

### The Poisoning of Michigan

Scan the text and answer the following questions:

1. With what chemical were tens of thousands of Michigan cattle poisoned?
2. What terrible effects did it have on people?

In the spring of 1973 a truck driver, remembered only as Shortly, made a routine delivery from a chemical factory in Central Michigan to an agricultural feed plant in another part of the state. The plant's workers unloaded a ton of what they believed was magnesium oxide, a crumbly whitish substance, packed in heavy brown paper sacks on which a trade name was crudely stenciled. Over the next few weeks this was mixed into tons of cattle feed and sent to farm suppliers throughout Michigan.

In fact, a hideous mistake had been made. Whoever loaded Shorty's truck filled it not with magnesium oxide, a harmless antacid which was often added to dairy cattle feed to improve milk production, but with almost identical sacks of a similar-looking substance – polybrominated biphenyl (PBB). This was an industrial chemical, developed to bond with hard plastics and make them fireproof, and it was highly toxic.

The two chemicals, produced in different buildings at Michigan Chemical Corporation's factory, should have been kept in separate warehouses, and dispatched from different loading areas. They weren't – and afterwards no one could explain how this mistake was made. Neither Shorty, nor the men who handled the bags at either end of this trip, noticed the difference. Given that magnesium oxide was sold under the trade name of Nutrimaster, and PBB under the name of Firemaster; that some of the lettering on the bags was smudged; that some of the mixer operators were barely literate – the mix-up was understandable. Yet no

one had investigated it, and so tens of thousands of Michigan cattle were poisoned, and the poisoning spread to everyone who consumed Michigan beef and milk.

It was not a single disaster. Cattle ate contaminated feed day after day for months before one farmer, with an exceptional knowledge of chemicals, was able to track down the reason why so many of his animals had sickened and died. Working in isolation he had no idea that other farmers were suffering too – and each of them also assumed that the undiagnosed plague which devastated his herd was unique.

The farmers sent their unprofitable animals, and what milk they produced, to market. Consequently, for at least nine months, heavily contaminated meat and dairy products were widely sold in Michigan supermarkets. When a thorough investigation of the human health effects was eventually made, it was estimated that all of Michigan's nine million inhabitants had ingested enough PBB to accumulate a body burden of a chemical so persistent that traces would remain in their tissues for the rest of their lives.

By then the experts had discovered that PBB can wreak havoc with the liver, the central nervous system, the bones and the immunity system. It crosses the placenta to the foetus, and shows up in the breast milk of nursing mothers. It is suspected of causing cancer and genetic damage.

When Michigan was contaminated, the only poisoning of which most local doctors had experience was the acute kind which makes people immediately ill. They failed to understand a chronic toxicosis which builds up over months, slowly retarding bodily functions, and for a long time they insisted that PBB appeared to do no damage.

“We were mired in a swamp of ignorance”, Michigan's Director of Public Health later admitted.

(from an article by Joyce Egginton in *The Observer*.)

*cattle*: cows are female cattle; bulls are male cattle

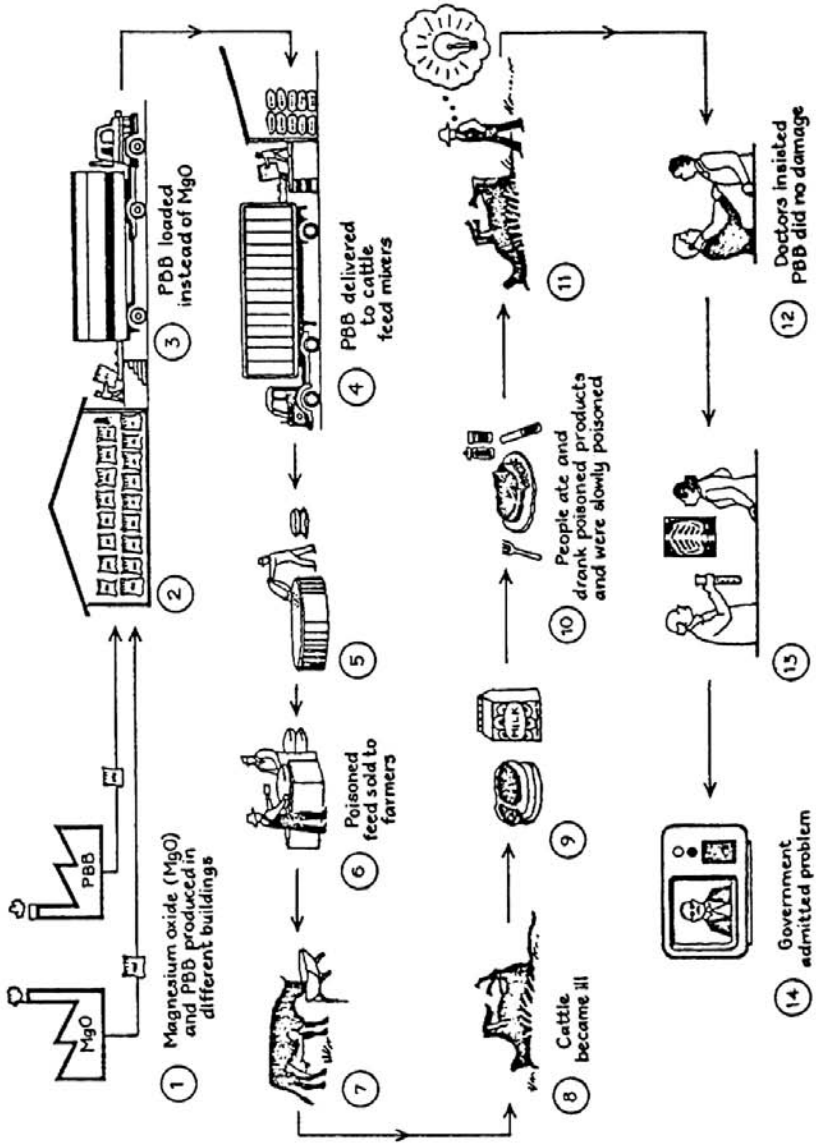
*barely literate*: not able to read or write very well

*that the undiagnosed plague which devastated his herd was unique*: that he was the only farmer whose cattle were being killed by a sickness he did not understand.

*traces*: very, very small amounts

*harmless*: something that is harmless cannot hurt anyone

*foetus*: child that has not yet been born, but is still inside its mother



## Task I

### Summary skills 1

Above you can see a chart of the main events in the article, in the order in which they happened. (Like many articles and stories, this one does not tell the events in the exact order they happened.)

Fill in the blank spaces on the chart.

### Summary skills 2

At what five places on the chart did someone do his or her job badly? Do not hesitate to look back at the text.

### Guessing unknown words

Match each italicized word in column A with the meaning in column B that comes closest to it. Column B has some extra meanings.

COLUMN A	COLUMN B
1. ...packed in heavy brown paper sacks on which a trade name was crudely <i>stencilled</i> .	a) attach itself to
2. This was an industrial chemical, developed to <i>bond</i> with hard plastics and make them fireproof.	b) missing
3. ...and it was highly <i>toxic</i> .	c) eaten
4. The two chemicals...should have been... <i>dispatched</i> from different loading areas.	d) explain
5. ...that some of the lettering on the bags was <i>smudged</i> ; ...	e) difficult to read
6. ...one farmer...was able <i>to track down</i> the reason why so many of his animals had sickened and died.	f) stored
7. ...it was estimated that all of Michigan's nine million inhabitants had <i>ingested</i> enough PBB to accumulate a body burden of a chemical so persistent that traces would remain in their tissues for the rest of their lives.	g) complete
	h) find
	i) poisonous
	j) dangerous to touch
	k) written
	l) sent by truck
	m) seriously damage
	n) fed to their cattle

- |  |  |
|--|--|
| 8. By then the experts had discovered that PBB can <i>wreak havoc with</i> the liver, the central nervous system, the bones and the immunity system. |  |
|--|--|

### Task III

#### Why?

Read the article again. Then do the exercise, which needs a better understanding of the text than the Summary skills exercises. You will probably want to look back at the text to be sure of your answers.

1. The people who mixed the cattle feed did not notice that they were using a different chemical from the usual one. There are five reasons; find as many of the five as you can.
2. Why wasn't it discovered sooner that so many of the cattle in Michigan were suffering from a mysterious disease?
3. Only one farmer discovered the cause of the disease. Why?
4. PBB has terrible effects on people, but these were not discovered for a long time. Why?

### Task IV

#### Study the negative expressions and do the exercises.

Negative expressions do not always contain “not” or “no”. For example, in the sentence

“She could have told me earlier!”

the words could have carry a negative meaning; it is clear that “she did not tell me earlier”.

You probably know most of the “negative expressions” in English, but if you read carelessly you can miss them, and misunderstand a sentence completely.

In this exercise, underline or note the negative expressions and write a sentence with “not” in it for each situation.

1. The plant's workers unloaded a ton of what they believed was magnesium oxide.
2. The two chemicals should have been kept in separate warehouses.
3. Neither Shorty, nor the men who handled the bags at either end of the trip, noticed the difference.
4. They failed to understand a chronic toxicosis which builds up over months.

## Supplementary texts

### Task I

Look through the text and think of a title. Prove your point.

I love cities, living in them, working in them, visiting them, and learning about their similarities and differences. Over the years, I have made my home in Berlin, Germany; Rome, Italy; Ankara, Turkey; and New York and New Haven, USA.

In the past ten years, it has become increasingly difficult to reconcile how I *feel* about cities with what I am forced *to think* about them. There's no doubt about it: Today's cities and the people who live in them face serious problems. Headlines tell us, almost daily, that some of my favorite cities are on the verge of financial and social bankruptcy. All the evils of life in our decade seem to be concentrated in cities: pollution, congestion, overpopulation, poverty, drug abuse, and crime. If one mentions such adjectives as filthy, sleazy, rundown, corruption-ridden, or teeming, what immediately comes to mind is a street in the large city one knows best.

Some cities seem to be strangling in their own traffic jams. Others are almost buried under a mountain of uncollected garbage and trash. Venice is literally sinking into the water and Mexico City into the ground. Cities seem to get the worst of bad government, and the best and most progressive administrations seem to have run out of ideas on how to solve urban difficulties. And yet, to millions of people throughout the world, cities are still a symbol of hope.

Although some cities (New York, for instance) seem to be losing population, very few city dwellers move into the rural countryside. Instead, they move either to another city or to an area around the city. From the air, some cities look like an ever-expanding doughnut. The center is becoming an empty hole, while the outer edges expand.

What are people looking for when they leave the countryside in which their families have lived for generations and move to large and problem-ridden cities? Everyday life for them seems to get worse, not better. Often they seem to get the worst in housing, education, health care, and jobs that their countries have to offer. And yet they rarely return to the rural area they have left. Some governments have tried persuasion and the promise of better homes, education, and health care to get families

living in squalid huts or tenements in inner cities to go back into the farm country from which they came. Other, more tyrannical governments, have forcibly moved people out of the city and back to the country, only to see them come back to the cities as soon as official pressure allowed.

We don't really need statistics to prove to us that we are becoming, increasingly an urban planet. The astronauts, flying their spaceship far above the globe, may have seen the earth as green and blue: vegetation and water. From an airplane, which gives us a closer view, the earth looks mainly gray and brown by day, black with millions of twinkling lights by night –...

From my trip around the world, the most important conclusion that I reached was that cities, large or small, European, Asian, African, or American, all have their share of problems. But they are not, in and of themselves, *the* problem. In even the most frighteningly confused, poverty-stricken, seemingly hopeless urban areas we found a community spirit that seemed to prevail against all difficulties. Everywhere there were creative, vital people: from the policeman walking the beat in London's most crowded slums to the woman physician in New Dehli trying to cope with four times the number of sick and dying that her hospital could hold; from a high city official in Jerusalem who worked with a loaded submachine gun slung behind his chair to a home economics teacher in Katmandu teaching the first principles of health and hygiene to a class of semi-illiterate girls. These people, of course, did not have ready-made solutions to their city's problems; but all left that there was no reason to give up hope, ...that with planning, hard work, and a lot of luck their cities might yet be made into places where families might live and someday work in decent and humane surroundings.

## **Task II**

### **Finding Support for Main Ideas**

As a class or in small groups, make a list of examples given in the article for each of the following main ideas.

1. Cities and city dwellers of today face many serious problems.
2. Governments have tried in various ways, but without success, to keep country people from moving to the city.
3. Even in very poor and problem-ridden urban areas a community spirit seems to prevail against difficulties.

### Task III

#### Talking It Over

1. Why does the author have difficulty in reconciling her feelings about cities with her thoughts about them?
2. Explain the comparison made between certain cities, viewed from an airplane, and an ever-expanding doughnut.
3. What do you think people are looking for when they move from the countryside to a city?
4. What cities have you lived in? Which ones have you been to? What urban problems did you see there?
5. In your opinion, where would you find more privacy: in a large city, in a small town, or in the countryside? Why? Where would you find a better sense of community?
6. If you had your choice, would you prefer urban, town, or country living? Where exactly? Why?

### Task IV

1. Write a problem essay.

Write about the problems your native city faces. Do you have any ideas how to solve them?

2. Before you start writing analyze and use an outline for a problem essay.

Problem essays are formal in style. They require your opinion on a topic which must be clearly stated and supported by reasons. It is necessary to include the opposing viewpoint in another paragraph.

An essay discussing problems and suggesting solutions is a formal piece of writing. You should state the problem and its causes clearly, then present your suggestions and the expected results or consequences these might have.

A successful essay of this type should consist of:

- a) an introductory paragraph in which you clearly state the problem, what has caused it, and the consequences.
- b) a main body in which you present several suggested solutions, each in a separate paragraph together with its consequences/results and
- c) a conclusion in which you summarise your opinion.

Useful Language



- To introduce suggestions: To begin/start with, One way to, Another solution would be.....,
- To express cause: since/because, in view of/because of/owing to/ due to (the fact that)...., The reason that .../why .../for... is that...  
To express effect: thus/therefore/so/consequently, as a result/consequence, the result of ... would be ..., ... would result in ...  
To express purpose: so that..., so as/in order (not) to ..., with the purpose of/intention of (+ing)  
To express possibility/probability: It can/could/may/might..., It is possible/probable/(un)likely/foreseeable/certain that..., ... is (un) likely to/bound to/certain to/ possible/probable..., The likelihood/possibility/probability of (-ing/noun) is...  
To conclude: All in all, To sum up, All things considered.

*Introduction*

*Paragraph 1*

*state the problem and its cause(s)/consequence(s)*

*Main Body*

*Paragraph 2*

*suggestion 1 & result*

*Paragraph 3*

*suggestion 2 & result*

*Paragraph 4*

*suggestion 3 & result*

*Paragraph 5*

*suggestion 4 & result\**

*Conclusion*

*Final Paragraph*

*summarise your opinion*

\* You may include more suggestions, and thus more paragraphs in the main body

**TEXT: Local Pollution (Class I)**

**I. Pre – reading**

Every day when you go to the University you go through the forest and see enormous amounts of garbage: cans and bottles, old newspapers, plastic wrap...

How do you feel about it? Do you like living in such a place? Are you concerned about the garbage problem?

2. Think of as many words as possible related to the theme “Local pollution”

3. Vocabulary work. Work in pairs.

Guess the meaning of the words on the left by reading their definitions on the right:

trash – anything useless, rubbish

dump – the place for throwing rubbish

to toss out – to throw out

to linger – to remain

to rot – to decompose, to decay

## II. Reading

1. Read the text and answer the following questions:

1. What is trash? (examples)
2. Where does it usually go?
3. How did the trash in the past differ from nowadays?
4. What are two possible ways of dealing with the garbage problem?
5. Why are people concerned about this problem?
6. Does the author give any advice to people? What is it?

Trash is probably the most basic kind of pollution. We throw out enormous amounts of garbage every day: cans and bottles, old newspapers, the plastic wrap that covered the chicken. If you buy a candy bar, *you* have to throw away the wrapper, which becomes trash. If you throw a newspaper in the wastebasket, it also becomes trash. How much trash do we produce? The average American family throws out 70 pounds of trash a week. If that family saved its trash for a year, it would weigh as much as a car. It's hard to understand just how much trash we throw out until you see a big dump or sanitary landfill. In New York City, a lot of trash goes to one big landfill on Staten Island. It arrives in huge barges, which are unloaded by cranes (and by seagulls, who divebomb the dock looking for scraps). Today's trash is heaped on top of yesterday's, with a thin layer of dirt put in between. Everywhere you look there is trash. When it is completely filled up, the dump

on Staten Island will be 500 feet tall. That's taller than a 30-story building. People have always thrown things away, but not as much as they do now. Why did people in old days throw less out? For one thing, they had less to begin with. They didn't have many of the conveniences we do. Say they wanted some candy. Instead of going to the store, they had to make it. It was hard work, but there was no wrapper to throw away. When people did buy something from the store, they often reused the package it came in. For instance, they might have reused jars to store vegetables for the winter. They might have made a shirt out of the cloth sack the flour came in. And whatever people did throw out was usually made from wood or other natural material. That meant it would eventually break down and return to the soil, or degrade when it was exposed to air or water. Today, much of what we throw out isn't naturally degradable. What can we do about all this trash? Recycling is one promising way to deal with the problem. Probably some people already recycle bottles, cans, newspapers, and plastic. Instead of just tossing them out, they set them aside so they can be specially collected. The newspapers are broken down and made into new paper. Glass and metal are melted down and made into new containers. Plastic is melted down and made into combs, park benches, cassettes, and other products. An even better way to deal with the garbage problem is to reduce the amount of manufactured products we use in the first place. We don't need to go to live in caves, or give up all our modern conveniences to do that. We just need to work a little harder. Here's an example. The bagger at the supermarket might put your groceries in a plastic bag or he might put them in a paper bag. Making the plastic bag takes oil, and that bag will linger in the environment long after you toss it out. The paper bag will eventually rot in a landfill, but making it required cutting down a tree. You could help save natural resources and reduce pollution if you took a few cloth bags with you each time you went to the store. There are plenty of other kinds of local pollution, but thinking about garbage is a good place to start because it's so easy to see. And you don't need to be a scientist to figure out how to cut down on trash. You just need to be willing to work at it a little harder.

### **The House That Trash Built**

Architect Michael Reynolds has chosen to recycle 3,000 used tires and

200,000 empty aluminum cans in an entirely new way. He is using them to build a house. Right now Reynolds is building one of his «earthship» can-and-tire houses for actor Dennis Weaver. And, though it's being built of garbage. Weaver's house won't be a dump. It will have 14 rooms, complete with waterfalls, and a sweeping view of the Colorado Rockies.

- 1) Where is this house situated? 2) What is it made of? 3) Is it comfortable?

### III. Post – reading

**Match the beginnings with the endings to form complete sentences:**

- |   |   |
|---|---|
| 1. If you buy a candy bar,...                             | a) but not as much as they do now.  |
| 2. Today's trash is heaped on top of yesterday's,...      | b) they often reused the package it came in.                                |
| 3. People have always thrown things away,...              | c) <i>you</i> have to throw away the wrapper, which becomes trash.          |
| 4. When people did buy something from the store,....      | d) with a thin layer of dirt put in between.                                |
| 5. An even better way to deal with the garbage problem is | e) was usually made from wood or other natural material.                    |
| 6. And whatever people did throw out ....                 | f) to reduce the amount of manufactured products we use in the first place. |

### IV. Language Focus

**1. Fill in the gaps with the appropriate word(s) from the list below:**

packaged, long-term, entirely, waste, wrapping, good investment, transport, site, sorted, desirable

- 1) We should try to dispose of our ..... in a way that won't harm

- the environment, (rubbish)
- 2) The hole in the ozone layer will have .....effects on the world's climate. (long-lasting)
  - 3) An empty piece of land outside town is the .....for the new supermarket. (location)
  - 4) Reducing the size of classes in state schools is a(n) .....aim. (attractive)
  - 5) One of the most convenient means of..... is the aeroplane, (travel)
  - 6) Frozen vegetables are usually ..... in sealed plastic bags, (put in)
  - 7) We should try to buy products with as little .....as possible, (packaging)
  - 8) Rubbish must be ..... before it is sent for recycling. (separated into similar types)
  - 9) Their house is built ..... of materials taken from demolished buildings, (totally)
  - 10) That antique table was a .....; it has tripled in value since I bought it. (profitable purchase)

**2. Fill in the correct word derived from the words in brackets.**

If we want to find a 1) ..... (solve) to the world's waste disposal problems we should look at Palm Beach county in America. The county has an 2) ..... (ambition) recycling scheme which has been 3) ..... (extreme) successful. Waste is almost entirely recycled. Even the kitchen waste is used to provide 4) ..... (electric).

**V. Follow-up activity**

- 1) You are trying to teach your younger sister or brother to recycle waste. Use the expressions below to prepare what to say.  
Everyone can help by ..., Your recycled waste can be made into ..., It's a good Idea to... etc
- 2) Work in pairs to suggest ways to save the environment.  
Discuss what action has already been taken in your country to protect the environment.
- 3) Read the poem aloud. Translate it and answer:  
What kinds of pollution are mentioned and who suffers the most?

## POLLUTION

Pollution, pollution, - you can use the latest toothpaste

And then rinse your mouth with industrial waste

Just if go out for a breath of air

And you'll be ready for medicare.

The city streets are quite a thrill –

If the hoods don't get you, the monoxide will.

Pollution, pollution - wear, a gas mask and a veil.

Then you can breathe - long as you don't inhale.

Fish gotta swim, birds gotta fly -

But they don't last long if they try.

Tom Lehrer

## NOTES:

medicare - state-run medical treatment in the U.S. gotta = got to (American spoken English).

4. Most foreigners staying in Academgorodok are impressed by the clean air and the beauty of the surroundings. But is everything as good as it looks in Academgorodok?

1) fresh-water fish are dying off and the numbers are decreasing. At the same time fewer people are swimming in the sea.

2) The beaches are strewn with litter, glass bottles, waste paper, tins.

3) Some plants are disappearing.

4) Industrial air pollution is being somewhat reduced

but exhaust is not. In small groups try and design a campaign called:

“KEEP ACADEMGORODOK TIDY”

- What measures should be taken to keep Academgorodok clean, comfortable, attractive?

What are the most effective ways of waking people out of their complacency?

Decide on *activities* and *posters*. (e.g. “Forests are our Lungs !”)

Add some others!

### Vocabulary List

1. to bolster ['bɒlstə] – to improve something, to support.
2. drought [draʊt] – no rain
3. flood [flʌd] – too much rain
4. guesstimate (informal) – an attempt
5. to guesstimate – to suppose
6. to lurk – to be out of view, to hide
7. malaria [mə'leəriə] – disease caught from certain mosquitoes, causing fever.
8. precarious [prɪ'keəriəs] – uncertain, unsafe
9. rabies – disease that can be caused by bite from a dog, raccoon, e.t.c.
10. rogue [rəʊg] – cunning, lying, false
11. to stalk – to follow a person
12. a showstopper – the most outstanding performance
13. to unleash – to free, to let go

## ANSWER KEY

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### Listening

### Tapescripts

A: Did you see that thing on the news last night about the twister in Sussex? B: In Sussex? You're kidding!

A: No, really! I couldn't believe it either, but apparently England is **particularly prone to** them, they said. There's something like 35 a year, but most of the time they happen in really remote, cut-off areas so nobody really gets affected by them.

B: Really? I thought they only happened in Tennessee and places like that. So was it bad?

A: Yeah, pretty bad. It only lasted a few minutes, but it caused a lot of damage. It ripped through a residential area and some houses **had their roofs blown off**, a few garden sheds were blown to pieces, lots of windows got blown out.

B: God! Was anyone killed?

A: No, but a few people ended up in hospital with cuts and bruises from all the flying **debris**. Oh, and there was a cow involved as well! It got sucked up and **dumped** about a mile away in a supermarket car park!



B: Oh! I bet that made a right mess. I'm glad It wasn't me that had to clean that up!

## Text 2

A: Hiya. Did you have a good Christmas?

B: Yeah, it was great, thanks. We only got back last night, actually).

A: Oh right. Where was it you went again? It was Asia somewhere, wasn't it'?

B: Yeah, we were in Nias in Indonesia. It's this island off the south coast of Sumatra. It's a big surfing place. The waves there are amazing.

A: Wasn't that one of the places that got hit by that tidal wave the other year?

B: Yeah, it was. I think something like a thousand people died there and half the villages were wiped out. We were staying right on one of the beaches that got hit by it. It was a pretty sobering experience, really. **I** mean, they've done a lot of **reconstruction work** and everything, but there were still bits they haven't really managed to rebuild yet and almost everyone we met had been affected by it all in some way or another.

A: Yeah, I bet.

B. The guy who ran the hostel place we were staying in actually lost his brother and was left homeless for weeks afterwards. It was just incredible how **upbeat** he seemed — given the circumstances.

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## Listening

### Tapescript

#### The Greenhouse Effect

If the earth was not surrounded by a (1) **warming** blanket of air, it would be much too cold for (2) **human** habitation. Earth's (3) **atmosphere** acts as this blanket because it contains small amounts of carbon dioxide, methane, nitrous oxide, and other gases in the atmosphere known as (4) **greenhouse gases**. These gases help retain (5) **heat** through a (6) **vital** process known as the greenhouse effect.

The greenhouse effect occurs when (7) **sunlight** passes through the atmosphere and (8) **strikes** the Earth. Some of the light is (9) **reflected** and some is absorbed. The absorbed light warms the (10) **surface** of the earth. The heated surface then radiates (11) **infrared light** into the atmosphere where it is absorbed by greenhouse gases. These gases help regulate the temperature of the Earth.

(12) **Due to** the burning of large amounts of coal, oil and natural gas, the amount of greenhouse gases in the atmosphere has (13) **dramatically** increased over the last 300 years. For instance, carbon dioxide, (14) **abbreviated** as CO<sub>2</sub>, has increased 300 (15) **percent** since 1750.

Trees (16) **remove** CO<sub>2</sub> from the air, as part of their (17) **natural** processes. As human beings cut down forests, the capacity of (18) **trees**

to remove CO<sub>2</sub> from the air is (19) **diminished**. Scientists are **concerned** that as we continue to burn large (20) **amounts** of fossil fuels and (20) **deplete** our forests an (21) **exaggerated** greenhouse effect will occur resulting in an increase of the world's (22) **surface** temperature known as (23) **global warming**.

A warming of only a few degrees could cause a number of environmental problems, including the melting of the polar (24) **ice caps**, causing ocean (25) **levels** to rise and flooding (26) **coastal** areas.