Методичні вказівки для СРС та навчальний матеріал з англійської мови для студентів V та VI курсів заочної форми навчання.
Напрям підготовки: екологія.
Спеціальність – екологія рекреаційного та курортного господарства.

Укладач: П'янова І.Ю., Одеса - ОДЕКУ, 2006 р., 28 с.

ПЕРЕДМОВА

Практичне володіння англійської мовою при заочній формі навчання означає вміння самостійно за допомогою словника читати літературу за фахом англійською мовою, знаходити корисну для роботи інформацію, а також перекладати тексти за фахом рідною мовою.

Метою запропонованих методичних вказівок для самостійної роботи студентів (СРС) та учбового матеріалу з англійської мови для студентів V-VI -го курсів заочної форми навчання, напрям підготовки – екологія, спеціальність – екологія рекреаційного та курортного господарства, є:

– виробити у студентів навички читання та перекладу науково-технічної літератури англійською мовою за фахом;

– розвинути вміння розуміти зміст прочитаного;

– підготовити навики постановки запитань до текстів англійською мовою;

– підготовити студентів до складання іспитів з англійської мови.

Навчальна програма для студентів V-го курсу розрахована на 104 години СРС та 10 годин аудиторної роботи; VI курсу – 100 годин СРС та 20 годин аудиторної роботи.

Програма з дисципліни англійська мова
для студентів V курсу заочної форми навчання

№ п. п.	Назва теми занять	Кіль-кість годин ауди-торної роботи	Кіль-кість годин СРС	Види конт-ролю
1	Особливості перекладу науково-технічної літератури. Самостійний переклад текстів за фахом. Розмовна тема "My future speciality"	2	20	КР№11 УО
2	Структура і загальні принципи перекладу термінів. Переклад тексту за фахом	2	20	УО
3	Математичні знаки і вправи, математичні дії. Переклад тексту за фахом	2	20	УО
4	Переклад скорочень. Переклад тексту за фахом	2	22	УО
5	Робота з словником. Переклад тексту за фахом	2	22	УО

Програма з дисципліни англійська мова
для студентів VI курсу заочної форми навчання

№ п. п.	Назва теми занять	Кіль-кість годин ауди-торної роботи	Кіль-кість годин СРС	Види конт-ролю
1	Особливості перекладу науково-технічної літератури. Переклад тексту за фахом.	2	10	УО КР№12
2	Інформаційно-смисловий аналіз наукового тексту. Переклад та аналіз тексту за фахом.	2	10	УО
3	Структура і лексика наукової статті. Переклад та аналіз тексту за фахом	2	10	УО
4	Смисловий аналіз тексту, загальна схема інформаційно-смислового аналізу. Переклад тексту за фахом.	2	10	УО
5	Пошук наукової інформації. Переклад тексту за фахом.	2	10	УО
6	Смисловий аналіз науково-технічного тексту. Інтерпретація наукової інформації. Переклад тексту за фахом.	2	10	УО
7	Анотація наукової статті. Переклад тексту за фахом.	2	10	УО
8	Сполучні елементи речення і тексту. Переклад тексту за фахом.	2	10	УО
9	Анотація наукової статті. Переклад тексту за фахом.	2	10	УО
10	Практика у перекладі тексту за фахом.	2	10	УО

Методичні вказівки складаються з двох частин. В першій частині надаються 10 неадаптованих текстів з оригінальної літератури по спеціальності. Ці тексти використовуються як матеріал для практичної роботи на заняттях під час сесії, чи як позаудиторне читання, метою якого є знайомство з іномовною оригінальною літературою, накопичення лексичного матеріалу, характерного для данної галузі, та навичок перекладу перед виконанням контрольних робіт №11 та №12, які додаються в другій частині посібника і є контролем СРС. При перекладі текстів студентам рекомендується користуватись загальними та спеціалізованими перекладними словниками.

Контрольні роботи №11 та №12 мають 2 варіанти, кожний з яких містить 7-8 тис. др. знаків та додаткові завдання. Додатково кожна контрольна робота передбачає письмовий переклад з англійської мови суспільно-політичного тексту на 10 тис. др. знаків за вільним вибором студента. Критерії оцінки виконання контрольної роботи: – "зараховано" – студент переклав не менш ніж 80% тексту без суттєвих граматичних помилок, склав запитання до змісту тексту, виконав інші завдання;

– "незараховано" – студент переклав менш ніж 80% тексту, припустившись більш 10 граматичних помилок при перекладі текстів та складанні запитань; не показав знання основних термінів за фахом, які зустрічались у контрольній роботі.

TEXT 1

THE GARGAGE MESS

If we imagine ourselves aboard a spaceship, we realize immediately that one of the first problems we'd encounter would be how to dispose of trash. Garbage won't simply go away. Any waste we create has to be either stowed somewhere or converted into a usable product. If we earth dwellers had been clever and had thought about the problem beforehand, we'd have seen to it that we created as little trash as possible and that most of what we did produce was capable of being reused, recycled, or recovered.

Until recently, North Americans didn't have to worry too much about the trash they produced. there was plenty of open space in which to dump it, and there wasn't as much trash even a generation ago as there is today. Furthermore, most of it was biodegradable (it would decay naturally) and not nearly as hazardous as it is now.

American communities are currently facing twin problems in disposing of their wastes: the sheer volume of the trash and the toxic nature of much of it. In the United States and Canada combined, the amount of trash has doubled in the last thirty years and currently stands at some 200 million tons per year, or about 3.5 pounds (1,6 kg) per person per day. You might find these figures hard to believe, arguing that you certainly don't throw out that much. But you have to remember that municipal waste includes things like rusted cars and broken refrigerators as well as newspapers and beer cans. (Municipal waste does not include waste from manufacturing and industrial processes. That's another problem societies have to deal with.)

About four-fifths of the municipal waste is deposited in so-called sanitary landfills – damps where each day's waste is compacted and covered by a layer of clean earth. "Sanitary" is a deceptive word. Rain washes toxic chemicals from paint, pesticides, and other products into the soil, from which those chemicals eventually seep into groundwater supplies. Decomposing food wastes produce methane, a volatile gas that leaks into the air and soil.

Municipal landfill capacity is shrinking dramatically. The number of landfills in the United States fell from 18,000 in the late 1970s to 6,000 in 1990. One-third of these will be closed within the next five years, either because they are full or because they are dangerous to the environment. Facing an acute shortage of landfill space, some north-eastern states are paying other states and even other countries to accept their trash. As people become more aware of how landfills contaminate air, water, and soil, it becomes increasingly difficult for communities to site new landfills. Everyone wants them, but "NIMBY" (not in my backyard).

One alternative to burying trash is to burn it. About 10% of America's garbage is burned in incinerators that use extra-high temperatures to reduce trash to ash. Incinerators pose environmental problems of their own by generating toxic pollutants. Air emissions from incinerator stacks contain an alphabet soup of highly toxic elements, ranging from A (arsenic) to Z (zinc). The ashes left after burning, which are also toxic, are buried in landfills.

The "Five R's"

If we can't safely bury or burn our trash, how is it best handled ? An easy way to think about the problem of waste management is to focus on the five R's: **reduce, recycle, reuse, reject,** and **reward**. These are the solutions to trash disposal. Practical steps you can take to implement them are outlined in the next several pages. We begin with the method you are probably already familiar with: recycling.

The ways you'll be able to recycle will depend on the kinds of recycling services available where you live. Some schools and municipalities make it easy to recycle. Bins or dumpsters may be available in your dormitory or apartment house. (If they aren't, you might talk to the management about setting up a recycling program for the building.) There may be collection sites in supermarket or shopping center parking lots. Your community may even curbside pickup. If you're not sure what recycling programs are available in your area, call the office of solid waste management in your city or country or a commercial recycling center.

TEXT 2

A. RECYCLE ALUMINUM AND TIN CANS

The trash we bury in landfills represents huge amounts of wasted energy and wasted resources. We annually bury enough aluminum to rebuild the entire American commercial air fleet many times over and enough steel to reconstruct Manhattan. The wood and paper dumped in landfills could heat at least five million homes for two hundred years.

Americans recycle only 10% of their waste, but analysts say up to 50% is recyclable. Aluminum cans are easily recycled. Most communities have numerous places to drop off cans, and an increasing number have curbside pickups of recyclables. Some shopping centers have reverse vending machines that will pay you for aluminum cans.

Three good reasons to recycle aluminum cans:

1. An aluminum can thrown away in the trash will still be in the landfill hundreds of years from now. A can that is returned and recycled is typically back on the supermarket shelf within two months.

2. Many states now require a refundable deposit on beverage containers. You'll get that money back if you recycle the can.
3. Making aluminum from raw materials is expensive because of the electricity required in the manufacturing process. But it takes only 5% to 10% as much electricity to make aluminum from scrap. The water and air pollution that accompany manufacturing are also reduced by 90% to 95%.

Incidentally, aluminum in other forms is also recyclable. This includes aluminum foil and frozen food trays, aluminum siding, aluminum pots and pans, and even lawn furniture. All of these can be made into similar products or into castings for new automobile parts. You would probably have to take such items to a recycling center.

Tin can recycling.

All tin cans (which are really steel cans coated with either tin or chromium) are also recyclable. Steel producers use scrap to make a variety of products. It is cheaper than making steel from scratch; it reduces pollution; and recycling keeps the cans out of the landfill.

B. RECYCLE GLASS BOTTLES AND JARS

Americans annually throw away almost as many glass bottles and jars as they do aluminum cans – roughly thirty billion a year. According to the Environmental Defense Fund, that's enough glass to fill the 1,350-foot (412-m) twin towers of New York City's World Trade Center every two weeks. Bottles and jars take up space in landfills needlessly, for almost all are recyclable. Manufacturing new ones to replace those that are discarded involves mining white sand, limestone, and soda ash, transporting these materials to the plant, dissolving them by superheating, and then cooling the mixture. These processes require energy, produce mining waste, and contribute to air and water pollution.

All glass bottles and jars are recyclable. Clear glass is used for some juice and beverage containers, peanut butter and jelly jars, and a variety of other food containers. Apple juice, prune juice, and beer often come in brown bottles, while green bottles are used for wine, beer, and a few soft drinks.

To reduce their volume, recycled glass jars and bottles are broken up before being shipped to the manufacturing plant. This recycled crushed glass is called cullet, and glass containers made in the United States typically contain a percentage of cullet. Manufacturers like it because it saves them money. Cullet lowers the temperature required to melt the sand-lime-soda mixture, so that less energy is consumed in the manufacturing process. And for every ton of cullet used to make new containers, approximately 1.3 tons of raw materials can remain in the earth.

Some kinds of glass are not recyclable: plate glass, mirrors, Pyrex, crystal, and light bulbs. These cannot be combined with cullet from glass jars and

bottles.

Recycling glass is almost as easy as recycling aluminum cans. Remove the caps and plastic rings, but don't bother with paper labels. Until you're ready to recycle, store the glass in a separate container from landfill-bound trash. (If space is a problem, you can combine all your recyclables in one large container and separate them when you get to the recycling center.) In states that have "bottle bills," you can return glass soft drink bottles to the store where you purchased them for a refund.

TEXT 3

A. RECYCLE NEWSPAPERS

Paper constitutes the largest portion of our trash, and newspapers alone take up 15% of the space in a typical landfill. One problem with newspapers is that they don't decompose much in landfills that have liners intended to prevent toxic materials from leaching into the soil. Another problem is that when they do decay, the inks leach into the soil and groundwater.

A decade ago, few Americans recycled their newspapers. Now the figure is up to one-third, thanks to states and communities that have passed mandatory recycling laws and to increasing awareness of the benefits of recycling.

- Recycling saves trees. Recycling one ton of newspaper saves seventeen trees from being ground up into virgin wood pulp. The print run of a single Sunday edition of *The New York Times* takes 75,000 trees. The newsprint for a single edition of all the Sunday papers in North America takes more than a half-million trees.
- Much less energy (about 30% to 50%) is a required to make new paper from old paper than to make new paper from scratch.
- Recycling saves over half the water needed to manufacture virgin paper. Recycling just one ton of newspapers conserves 7,000 gallons of water and also reduces the water pollution that results from the production of virgin paper.
- Recycling that ton of newspapers also keeps some 60 pounds (27 kg) of air pollutants from being discharged into the atmosphere.
- Finally, recycling helps preserve the ecological diversity of our forests. Although timber companies replant the areas they log, the new forests don't resemble the original. they are really tree farms with a very few species of trees arranged in orderly rows. They lack the undergrowth of flowers, vines, and shrubs that characterize older forests and offer food and shelter for wildlife.

You may not get paid directly for the newspapers you recycle, but you'll be doing a world of good.

To recycle, stack the newspapers inside a brown paper supermarket bag or tie them with string. Do not include the Sunday magazine section or advertising circulars that are printed on glossy paper. Drop the papers in the appropriate receptacles in supermarket or shopping center parking lots, take them to a commercial recycling center, or put them out for curbside pickup.

B. RECYCLE SOME PLASTICS

Plastic constitute a small but rapidly growing percentage of trash. North Americans throw away about sixty million plastic bottles every day, as well as thousands of tons of plastic in other forms-garbage bags, food wrappers, and so on. Plastics don't decompose in landfills. If they are incinerated, they release chemicals into the air that pose a threat to human health and the environment. Plastic six-patch holders, plastic bags, and other plastic litter blown into the water from landfills are deadly. Each year well over a million birds and fish die from starvation or choking when they ingest or get tangled in such debris.

Because there are many different kinds of plastic, recycling is a problem. Not all plastics can be melted down and recast. Some containers, like squeezable catsup and jelly bottles, are made from more than one kind of plastic, which makes recycling almost impossible. Nevertheless, analysts estimate that about half of plastics we commonly use can be recycled. Two types with which you are probably familiar are polyethylene terephthalate (PET) and high-density polyethylene (HDPE). Recycle both, if you can.

PET is used for soft drink bottles, peanut butter and mustard jars, and microwavable or boilable food pouches. These are recyclable. Although recycled PET is not used to make new soda bottles, because of the fear of contamination, it can be used as fiber for carpets and filler for sleeping bags, as well as in scouring pads and a variety of other products.

HDPE is used for milk jugs, detergent and bleach bottles, butter tubs, trash bags, and other items. It can be recycled into items such as trash cans, flowerpots, and lumber for park benches and boat piers.

At the present time, most communities lack the facilities to recycle other types of plastic. However, the plastics industry is experimenting with various processes to make recycling possible, and within a few years recycling programs may be expanded to include them.

TEXT 4

REUSE ITEMS WHENEVER POSSIBLE

Recycling is one of the "five R's" for dealing with the garbage problem. Another is to reuse things however and whenever feasible. This will cut down on the amount of trash going to landfills; it will reduce the amount of energy used to produce goods; and it will save you money because you won't have to buy as much. Here are some suggestions for reusing things:

- Paper and plastic bags can be reused a number of times before they need to be discarded. Paper bags are good wastepaper basket liners; plastic bags from the produce section of the supermarket are ideal for covering food in the refrigerator.
- Use plastic bags from the dry cleaners to cover out-of-season clothes in your closet, to line your suitcases, or to wrap Christmas ornaments.
- Use plastic food containers to store food or items in your desk or workshop.
- The top half of a plastic 1- or 2-liter bottle makes a good funnel.
- Buy reusable cotton filters for your coffee machine.
- Strips cut from worn-out nylon stockings are perfect for tying plants to stakes to hold them upright.
- Reuse gift wrap, boxes, ribbons, and bows. Wrap a child's present in the Sunday comics.
- Use rechargeable batteries in your radio, flashlight, and camera.
- Save ashes from the barbecue grill and fireplace in a trash can, then sprinkle them on icy sidewalks and driveways in the winter time.

If you no longer have any use for an item, think of an organization that could use it. Donate used clothing to a charity or church for its bazaar. Sell used books to a dealer in second-hand books or donate them to a public library. Give magazines to a friend or to a hospital or retirement home. Eyeglasses can be donated to an organization that will distribute them to needy people. Donate used furniture and appliances to a day-care center, a shelter, are a charity. If you live in a group setting, such as a dormitory or apartment house, it would be efficient to collect donations from a number of people. If you have enough material, an organization such as the Salvation Army or St. Vincent de Paul will pick it up.

TEXT 5

REDUCE THE AMOUNT OF TRASH

Recycling and reusing are two ways to reduce the amount of material entering the solid waste stream. Here are some other ways. You probably won't implement all of them, but even adopting just a few will help cut down on the amount of trash you throw away.

Whenever possible, buy durable rather than disposable items:

- Use cloth rather than paper napkins.
- Use sponges or cloth towels rather than paper towels to wipe up spills.
- Use newspapers instead of paper towels to clean your windows. Old newspapers are free, and they don't leave lint.
- Store food in container rather than covering them with aluminum foil or plastic wrap. If you must use a wrap, try cellulose or waxed paper, which are biodegradable.
- Use a lunch box or small tote bag instead of a paper bag for your lunch and a thermos bottle instead of single-serving containers of juice or milk.
- Remove makeup with a washcloth rather than tissues or cotton balls.
- For your morning cup of coffee and doughnut, use a ceramic coffee mug and plate, not paper or styrofoam cups and plates. Use metal instead of plastic cutlery. It's foolish to throw away something you've used for just a few minutes, which will then take decades or centuries to decompose in a landfill.
- If you're having a party, borrow glasses and dishes from a friend rather than using disposable ones.

Try to avoid buying overpackaged products. By "overpackaged" we mean those that are needlessly packaged, those packaged in nonbiodegradable material, like foam or plastic, or those packaged in singleserving units.

- A classic example of needless packaging is oranges on a styrofoam tray with a plastic overwrap. Whenever possible, buy loose fruits and vegetables that you bag yourself instead of prepackaged produce. Many supermarkets have bins of nuts, candies, dried fruit, trail mix, and the like. You can help yourself to the amount you need and avoid the excess prepackaging.
- If you need nails, washers, fuses, or other such items, patronize a hardware store that sells them in bulk. You'll be able to get the ten nails you need instead of twenty that are packaged in cardboard and plastic.
- Whenever there is a choice, avoid products packaged in nonbiodegradable material. Thus, you should buy butter or oleo that comes wrapped in paper rather than in plastic tubs. Buy bars of soap wrapped in paper, not

liquid soap in a plastic bottle. Buy soft drinks that come in returnable or recyclable containers, preferably bottles or cans.

- Try not to buy products packaged in single-serving units. This includes individually wrapped slices of cheese or single-serving packages of milk, juice, pudding, raisins, cookies, and crackers. In general, buy nonperishable food items in the largest size that you can afford and can store. You'll reduce the amount of packaging waste and also save money.

You may not know this, but you can stop most junk mail from arriving in your mailbox. Junk mail is a tremendous waste of resources – millions of trees annually, as well as the energy required to print and distribute the mail and then cart it off to a landfill or incinerator where, once disposed of, it will contribute to pollution of the ground, water, and air.

- Write to the Mail Preference Service, Direct Marketing Association, 6 E. 43rd Street, P.O. Box 3861, New York, NY 10163-3861 and ask that your name be deleted from junk mailing lists. It will send this information to large mailing list companies. You should notice the difference within a few months. While it may not cut off the flow entirely, it will definitely reduce it.
- You can also tear off the mailing label on any advertising mail you receive but don't want and send it to the company along with a note asking to be removed from its list. The label helps the company find your name in its computer file.

TEXT 6

REJECT DISPOSABLE DIAPERS

Recycle, reuse, reduce. A fourth "R" is reject. We suggest here that you reject certain kinds of products when you go to the store: disposables and nonbiodegradables. You can help solve the garbage crisis by not buying single-use, so-called disposable items like diapers, razors, cameras, and flashlights. Perfectly good (and less expensive) alternatives exist for all of these products – ones that can be used over and over again before they need to be discarded.

Of all the disposables, diapers present the largest problem. About twenty billion disposable diapers are used each year in the United States and Canada. They are made from over one million tons of tree pulp, the equivalent of about twenty million trees per year. Just their manufacture results in millions of pounds of pollutants being spewed into the air.

Disposable diapers present three main problems:

1. They account for about 3% of the waste going to landfills, where they take up space that could be used for other things.
2. They don't decompose readily. The plastic part of the diapers takes anywhere from two hundred years to decompose in a landfill.
3. Most people don't dunk disposable diapers in a toilet to rinse out the waste, thus they are still filled with urine and feces (which can contain such viruses as polio and hepatitis) when they end up in the landfill. Human biological waste isn't supposed to be put in landfills because contaminants will slowly leach into the earth and pollute groundwater suppliers.

There are several alternatives to using disposable diapers:

- Buy several dozen cloth diapers and wash them at home. This is the least expensive alternative.
- Buy all-in-one diapers, which are cotton liners with a waterproof shell and velcro closures. Several brands are available.
- Use a diaper service, which will deliver clean diapers to your house and take away the soiled ones. You're still likely to save a few hundred dollars a year.
- For those occasions when you must use disposable diapers, purchase those that haven't been bleached with chlorine. Chlorine bleaching produces dioxins, which are highly toxic pollutants. And be sure to rinse out the waste in a toilet before disposing of the diaper.

What about diapers or other plastics (trash, grocery, and merchandise bags) now being marketed as "degradable" and "safe for the environment" ? Don't be fooled. A truly degradable plastic isn't yet on the market.

Some plastics are called "photodegradable." They have to be exposed to sunlight in order to break down -- but the garbage in landfills isn't exposed to sunlight.

Others, labeled "biodegradable," break down in the presence of bacteria. They contain an additive, usually cornstarch, that allows them to degenerate, but it constitutes only 6% to 10% of the item's volume. Once the bacteria in the soil eat the starch, the plastic degenerates into many little plastic pieces, which can be carried away from the landfill and deposited in streams and oceans. Furthermore, extra plastic has been added to the item in the first place to compensate for the weakening effect of the cornstarch, so the total volume of plastic reaching the landfill hasn't been reduced at all.

A truly degradable plastic, one that degrades completely and harmlessly, will have to be made entirely from starch. Until such a product is developed, you're not doing the environment a favor by buying so-called degradable plastics.

TEXT 7

REWARD COMPANIES THAT DEMONSTRATE CONCERN FOR THE ENVIRONMENT

Whenever you purchase something, whether it's a birthday card or an automobile, your choice will have some effect on the environment. Is the card made from recycled paper; is it printed on bleached paper; does it contain pieces of plastic or toxic dyes ? How fuel-efficient is the car; does it have an overdrive gear; is it equipped with air conditioning or power windows ? Answers to questions such as these help determine the environmental impact of a product.

You can be a "green" consumer – one who buys goods and services that in their manufacture, use, and disposal are least harmful to the environment. Support companies that manufacture environmentally friendly products, that minimize waste, and that practice and encourage recycling.

Ample evidence indicates that corporations are becoming more sensitive about how their goods and services affect the environment and about how their companies are perceived by their customers. If enough consumers show by their purchases that they want to buy environmentally benign products, companies will pay attention. Recent public opposition to fishing techniques that trapped dolphins in tuna drift nets led the three biggest tuna canning companies to agree to buy only from fishing boats that use other methods.

How can you identify which products in a certain category are environmentally preferable ? The Canadian government has established a program called Environmental Choice. Products that meet certain standards must be derived from renewable resources; they must be nontoxic and either recyclable or biodegradable; and their packaging must meet certain criteria.

In addition, Canada's Largest supermarket chain, Loblaws, carries a line of President's Choice GREEN products. Items with this stamp of approval include unbleached, reusable coffee filters and toilet tissue made from recycled paper.

Identifying environmentally friendly products in the United States is more difficult. At present there are no nationally accepted standards for determining what products are environmentally sound – or even standards for defining such terms as "biodegradable" and "recyclable."

Recognizing the marketing importance of environmentalism, a few companies have attempted to appear environmentally sensitive by making irrelevant, deceptive, and even false claims about their products. An aerosol spray can may proclaim "No CFCs" while still containing other hazardous compounds. A plastic trash bag might be touted as "photobiodegradable" In spite of the fact that state landfill regulations will not permit it to be exposed to the elements so that it can decompose. An environmentally harmful product, such as a high-phosphate detergent, may come wrapped in "green" packaging made from recycled paper.

One U.S. retailer, Wal-Mart, identifies what it considers to be environmentally preferable products with green and white labels that point out the products' beneficial features. The store determines which items merit recognition by considering both their composion and packaging.

Another source of environmentally sensitive products are three mail-order companies:

- Earth Care Paper Co., P.O. Box 3335, Madison, WI 53704 (608-256-5522). Sells recycled paper goods, including greeting cards, gift wrap, and computer paper.
- Seventh Generation, Colchester, VT 05446 (800-456-1177). Has a wide variety of household products, from cellulose sandwich bags to safe cleaning products.
- Real Goods, 966 Mazzoni St., Ukiah, CA 95482 (800-762-7325). Emphasizes consumer energy technology and offers from low-flow heads to compact fluorescent light bulbs.

Finally, several recent books review products and how they affect the environment. Among them are:

- The Canadian Green Consumer Guide (Toronto: McClelland & Stewart, 1989).
- Ecologue: The Environmental Catalogue and Consumer's Guide for a Safe Earth, ed. Bruce Campbell (New York: Prentice Hall Press, 1990).
- The Green Consumer, John Elkinton et al. (New York: Penguin Book, 1990).
- Shopping for a Better World, Rosalyn Will et al. (New York: Council on Economic Priorities, 1989).

TEXT 8

HAZARDOUS WASTE

You probably associate hazardous waste with environmental disasters like Love Canal or Times Beach, Missouri, or perhaps with radioactive waste from nuclear power plants. You might be surprised to learn that hazardous materials are found in virtually every home in America, and that the typical American throws out 10 pounds (5 kg) of hazardous waste a year.

Hazardous waste is defined as discarded material that may pose a health and safety thread to humans, wildlife, or the environment when it is improperly stored, transported, or disposed of. Household products contain toxic chemicals that range from A (aldicarb, used in pesticides) to Z (zinc, used in batteries).

These products can be found in every room of a house, for they include oven and drain cleaners, furniture polish, used motor oil, and garden weed killers and pesticides.

The United States generates about 250 million tons of hazardous waste a year, or about one ton (2,000 pounds) per person. Canada produces some six million tons annually. That means this year, next year, and so on. Think how that will add up over your lifetime. Industries, agriculture, and power plants are responsible for most of that waste, but everyone who uses the products the industries have made, or the energy produced by the power plants, contributes indirectly to the waste.

Hazardous wastes can be liquids, gases, or solids. They may be hazardous for a number of reasons:

- Poisonous or toxic substances can be lethal to humans, animals, and plants. If exposure is slight, you might experience nothing more than a sore throat, dizziness, or nausea. But prolonged exposure to toxic substances can increase your risk of developing cancer, leukemia, and respiratory illnesses. Some toxic substances are suspected of causing reproductive problems and birth defects.
- Corrosive substances, such as battery acid or drain cleaner, burn or eat away at other materials, including flesh.
- Flammable materials, such as gasoline or solvents, can catch fire.
- Explosive or reactive substances (e.g., bleach and ammonia) can explode or release toxic vapors when they are mixed.

How do you know if something you buy is hazardous ? The boldfaced words in the preceding paragraph are a good indication. If they appear on the label, the product is hazardous. Other warning words that might appear are Poison, Danger, Warning, or Caution. Poison and Danger are the worst; they mean the contents are highly toxic.

Unfortunately, about 100,000 chemicals are currently in commercial use, and new ones are being developed every year. We tend to take their safety for granted, but in fact most have not been properly tested for their potential to cause adverse health effects in the long run. For more that 80% of them, there is no toxicity information whatever.

Let us assume that you have a hazardous product and want to get rid of it -- used motor oil or half a can of drain cleaner. This is what you should not do:

- Pour it into the sink or toilet. From there it will go into the city water treatment system, which is incapable of neutralizing it. Furthermore, it can release toxic fumes and is likely to contaminate the water into which the sewage is eventually discharged.
- Pour it onto the ground or into a storm sewer. It will be washed into a stream or filter down through the earth into an underground water supply.

- Put it out with your regular trash. It will either be incinerated (burned), in which case it will release toxic gases into the air, or be buried in a landfill. Then the can will open when a bulldozer runs over it, and the oil or drain cleaner will leak out and eventually contaminate the soil or water supply. Household toxins have started landfill fires that released toxic fumes across neighborhoods, and they have exploded, injuring or killing landfill workers.

Although these are the ways one should not dispose of hazardous waste, they are the methods most people use. We tend to assume that hazardous waste disposal is a problem for the industries that generate the waste, and we aren't aware of which household products are hazardous. In the pages that follow we indicate how to handle hazardous materials and suggest some safe alternatives.

TEXT 9

HANDLE, STORE AND DISPOSE OF HAZARDOUS WASTES PROPERLY

If you must not pour hazardous wastes down the drain or on the ground, or even put them out with your regular trash, what on earth should you do with them ? Recall the Spaceship Earth analogy, then see if the following steps make sense.

Learn to recognize what materials are hazardous

If you think a product you're considering buying might be hazardous, read the label. Look for words such as "danger," "warning," or "caution." Some labels describe the hazard with words like "corrosive," "flammable," "toxic," or "explosive." And sometimes labels indicate a health risk, e.g., "irritant" or "harmful if swallowed."

Purchase the toxic product available

Choose products made from safe, biodegradable materials. Select a waterbased substance over a solvent-based one for products like paint, glue, and shoe polish. Avoid aerosol products, which release fine particles of propellant every time they are used. When you inhale, these particles can lodge in your lungs.

Buy only as much as you need

If you buy a gallon of oil-based paint when you need only a quart, you'll have to store the remainder. If it gets old and dried up, you may end up throwing it out with the trash.

Use as directed

Use the recommended amount of a product, not more or less. Never mix chlorine-based cleaning products with those containing ammonia. If the material is flammable, extinguish nearby pilot lights. If it is to be used in a well-ventilated area, open the doors and windows or turn on an exhaust fan. Take whatever precautions are necessary to protect yourself, by wearing goggles, gloves, or a face mask. Chemicals can enter your body by absorption through the skin or inhalation of fumes and vapors.

Store unused portions properly

Keep the product tightly sealed, upright, and in its original container. Make sure that toxic products are not stored near food and that children and animals cannot reach them. Keep flammable products away from a source of heat. Consider giving unused portions of substances like paint and paint strippers to friends and neighbors, a church, or a social service agency.

Recycle the product if possible

Some hazardous materials, such as paint thinners, motor oil, and car batteries, can be recycled.

Dispose of hazardous wastes property

When you decide to get rid of unused portions of a hazardous material check the label to see if it contains any directions for disposal. If so, follow them.

Some communities maintain a permanent hazardous waste collection center. Others set up temporary centers a few times a year to collect waste. If you're not certain what your community does, call the city public works department for information. Should the city have no provisions at all for dealing with hazardous waste, write letters to the mayor, other public officials, and the newspaper about the need for a collection center. And try not to buy any more hazardous products yourself.

TEXT 10

SUBSTITUTE NATURAL FOR CHEMICAL BIOCIDES

The products we use to try to rid our houses and yards of pests comprise a significant source of hazardous materials. Known collectively as *biocides*, these include insecticides, pesticides, rodenticides, fungicides, and herbicides. They are meant to kill living organisms; in fact, the suffix "cide" comes from Latin verb meaning "to kill."

There are a number of very good reasons why we should use a few chemical biocides as possible:

- They harm creatures other than those they're intended to kill. Once used, a biocide settles into the soil, where it remains or is washed into a body of water. In either case, it is absorbed by organisms living in the soil or mud. Through a process known as biological magnification, the biocide accumulates and is concentrated at progressively higher levels in the food chain. Predators accumulate a larger amount than their prey, and the effect on birds and fish may be lethal. Some commonly used chemical biocides are suspected of causing cancer and birth defects and damaging the kidneys, liver, nervous systems, and immune systems in humans. Even the chemicals used in some flea collars have been found to cause permanent nerve damage, cancer, and birth defects in cats and dogs.
- Biocides end up in our food supply. More than one hundred different pesticides have been detected on commonly eaten fruits and vegetables.
- Biocides may exacerbate the problem they were designed to eradicate. By altering the natural processes that determine which insects in a population will survive, biocides spur the development of resistant species. If all but 5% of the mosquito population in an area is killed by an insecticide, the ones that survive are the most resistant individuals, and they are ones that will produce the succeeding generations. More than four hundred insect and mite species are known to be resistant to pesticides, and some "super weeds" are totally resistant to certain herbicides.
- Biocides have also created further problems by destroying beneficial insects, the natural enemies of the intended target, leaving the pest to breed unchallenged. Thus, spraying an infested crop might kill 90% of the pests – but it also kill the insects that eat the pests. With their food abundant and their predators rare, the remaining pests recover faster than their enemies, whose prey is now scarce and harder to locate.
- Biocides are overused. American households annually use over 60 million pounds (27 million kg) of toxic chemical biocides; agricultural uses account for another 460 million pounds (209 million kg).

- The entire process of insecticide development may be self-defeating. Despite the billions of pounds (and dollars) used to attempt to eradicate pests, crop loss to insect and weed pests has actually grown. According to Department of Agriculture figures, 32% of crops were lost to pests in 1945; forty years later, such losses had increased to 37%.

The solution for us as individuals is to avoid using commercial chemical biocides and to try alternative ways to get rid of pests:

- Use your own organic pesticides. Derived from plants, they don't persist in the environment as long as do chemical pesticides. Thus, cockroaches can be controlled by keeping your kitchen as clean as possible and sprinkling borax around baseboards, appliances, and ducts. Get rid of aphids by spraying plants with a mixture of pure soap dissolved in hot water. If you have a pet that is bothered by fleas and ticks, make the following rinse: Add 2 tablespoons rosemary to 2 cups boiling water. Let it steep for 20 minutes, strain it, and allow it to cool. Spray or sponge the mixture on your pet and allow it to air dry.
- Purchase environmentally friendly alternatives. A number of companies market natural pest control products, including insect repellents, insect traps, and flea and tick powders and sprays. Check your local health food or ecology store. Citrus rind oil concentrate is available at some pet stores. It can be used as a flea dip for dogs and cats.
- Buy organically grown fruits, vegetables, and grains. These have been grown without the use of chemical biocides. You'll not only be supporting farmers who are committed to protecting the environment, you'll also be ingesting fewer chemical residues yourself.

CONTROL WORK 11 -

Variant 1

I. Translate the text in writing:

SAVING WATER

Comparing the earth to a specially appropriate in the case of water. All of the water needed for a journey through space would have to be loaded on board at the beginning of the trip. There would be no way to manufacture additional water once the ship was in orbit. The water would have to be used over and over again.

In exactly the same way, the supply of water on earth is constant, and it's over four billion years old. The system by which water is continuously

circulated through the biosphere is called the *hydrologic cycle*. Evaporation and transpiration (the emission of water vapor from plants) are the mechanisms that redistribute water. Water vapor collects in clouds, condenses, and then falls again to earth. There it is reevaporated and retranspired, only to fall once more as precipitation.

If the supply of water is constant, if it will always be here, you might ask why we need to worry about conserving it. There are two good reasons. First, while we're not about to run out of water, we're already running out of inexpensive water. Think of what had to happen before you could turn on a faucet and get water. People had to locate a source of water; then they had to build aqueducts, canals, water tunnels, and pipes to carry it, machines to pump it, and plants to treat it. To carry away used water, they've had to build drains and sewers, and more plants to treat the water before it's discharged into a stream, lake, or ocean.

Providing water is costly, and the cost isn't just monetary. For example, the once majestic Colorado River, the only significant source of surface water in the southwestern United States, has been so transformed by dams and canals, pipelines, and reservoirs that it is now little more than a vast, controlled plumbing system. By the time the 1,400-mile-long (2,240-km) river reaches Mexico, it isn't much more than a creek. There, a final dam, the Morelos, diverts for irrigation what little water remains, so that by the time the river reaches the sea, it is dry. This Colorado River is a far cry from that seen by the Spanish explorer Hernando de Alarcon, who in 1540 journeyed up the river from the Gulf of California and described it as, "... A very mighty river, which ran so great a fury of a storm that we could hardly rail against it."

The fate of the Colorado Rivers implies the second good reason for conserving water. Agriculture, industry, urbanization, and a growing population are placing increasing demands on water supplies. As pressure on the water supply increases, there will be regional water shortages.

Thirty dams tame the Colorado River and its tributaries, and two massive reservoirs (Lake Mead and Lake Powell) store its water. Aqueducts and irrigation canals siphon off its water for use in seven western states and northern Mexico. Los Angeles, Denver, and hundreds of other cities couldn't exist as they are today without the water the Colorado provides, and the fruits and vegetables raised in the Central and Imperial Valleys would die.

Legally, all the water in the Colorado River is spoken for. California receives 4.4 million acre-feet per year, Arizona 2.8 million acre-feet, and so on. (One acre-foot is the amount of water that would cover an acre of ground with a foot of water – about 326,000 gallons.) Indeed, yearly allotments now stand at 16.5 million acre-feet, in spite of the fact that the Colorado rarely carries more than 14 million acre-feet! Shortages haven't occurred yet simply because not all the states are using the full share to which they are entitled. But demands are

expected to increase to that point in the very near future, perhaps by the end of this decade.

Another area where the demand for water is beginning to exceed the supply is the High Plains region, which stretches from South Dakota to Texas. Agriculture there depends on drawing irrigation water from a vast underground formation called the Ogallala aquifer. (An aquifer is a layer of water-bearing, porous rock lying between impermeable layers.) The Ogallala aquifer is the country's largest underground water supply, spreading under twenty million acres in eight states. It supports nearly half the country's cattle industry, a fourth of its cotton crop, and a great deal of its corn and wheat. But the 150,000 wells that now puncture the aquifer cause the water table to fall from 2 to 5 feet (0.6 to 1.5 m) each year – a rate that is far greater than the rate at which the aquifer can be replenished by nature. Hydrologists expect that as much as 40% of the irrigated acreage will be lost in the next twenty years, causing economic hardship in the region and food shortages in the country.

II. Put 5 questions to the text.

III. Give a brief summary of the text in English.

Variant 2

I. Translate the text in writing:

WATER POLLUTION

We said earlier that the supply of water is constant, and that the system by which it continuously circulates through the biosphere is called the hydrologic cycle. In that cycle, water may change form and composition, but under natural environmental circumstances, it is purified in the recycling process. When water composition has been so modified that it cannot be used for a specific purpose or is less suitable for that use than it was in its natural state, the water is said to be *polluted.*

Pollution is caused by discharging into water substances that cause unfavorable changes in its chemical or physical nature or in the quantity and quality of the organisms living in the water. Pollution is a relative term. Water that is not suitable for drinking may be completely satisfactory for cleaning streets.

People are not only cause water pollution. Decayed leaves, animal wastes, and other natural phenomena may affect water quality. There are natural processes, however, to take care of such pollution. Organisms in water are able

to degrade, assimilate, and disperse such substances in the amounts in which they naturally occur.

What is happening now is that the quantities of wastes discharged by people often exceed the ability of a given body of water to purify itself. In addition, we are introducing pollutants, such as metals or inorganic substances, that cannot be broken down at all by natural mechanisms or take a very long time to break down.

The five main contributors to water pollution are agriculture, industry, mining, municipalities, and urban drainage.

Agriculture

The kinds of pollutants associated with agriculture are biocides, fertilizers, and animal wastes. Runoff from farms and feedlots carries these contaminants into underground and surface waters. Fertilizers are responsible for depositing excess nutrients (nitrates and phosphates) in water bodies. There they hasten the process of *eutrophication*. Algae and other plants are stimulated to grow abundantly. When they die, the level of dissolved oxygen in the water decreases. Fish and plants that cannot tolerate the poorly oxygenated water are eliminated. Symptoms of a eutrophic lake are prolific weed growth, large masses of algae, fish kills, and water that has a foul taste and odor. About one-third of the medium- and large-sized lakes in the U.S. have been affected by accelerated eutrophication.

Industry

Many industries dump organic and inorganic wastes into bodies of water. These may be acids, highly toxic minerals, or, in the case of petroleum refineries, toxic organic chemicals. The nuclear power industry has caused some water pollution when radioactive material has seeped from tanks containing nuclear wastes. Acid rain, a by-product of emissions from factories, power plants, and motor vehicles, has affected the water quality of thousands of lakes and streams.

Mining

Surface mining for coal, iron, copper, gold, and other substances contributes to contamination of the water supply through the wastes it generates. Rainwater reacts with the wastes, and dissolved minerals seep into nearby water bodies. In addition to altering the quality of the water, contaminants affect plant and animal life. Each year, for example, thousands of animals and migratory birds die in such western states as Arizona, Nevada, and California after drinking cyanide-laced waters at gold mines.

Municipalities

Human wastes, detergents, and trash are the kinds of pollutants associated with towns and cities. Sewage can be a major water pollutant, depending on how well it is treated with chemical disinfectants or filters before being discharged. Raw, untreated human waste contains viruses responsible for dysentery,

hepatitis, spinal meningitis, and other diseases. More than 25% of all sewage in the U.S. flows untreated into rivers, lakes, and oceans. The figure is even higher in Canada, about 40%.

Urban Drainage

Water runoff from urban areas contains contaminants from insecticides, animal droppings, litter, vehicle drippings, and the like. The use of detergents has increased the phosphorous content of rivers, and salt (used for de-icing roads) increases the chloride content of runoff. Because the sources of pollution are so varied, the water supply in any single area is often affected by diverse pollutants. Contaminated dinking-water wells have been found in more than half of the states. Thousands of wells that tap aquifers have been closed in such states as New York, New Jersey, Massachusetts, and California. The pollution of aquifers is particularly troublesome because we depend on them for about half of our drinking water – yet unlike surface waters, groundwater lacks natural cleaning properties; it can remain contaminated for centuries.

II. Put 5 questions to the text.

III. Give a brief summary of the text in English.

CONTROL WORK 12

Variant 1

I. Translate the text in writing:

ACID RAIN

Acid rain is the term generally used for pollutants created burning fossil fuels that change chemically as they are transportated through the atmosphere and fall back to earth as acidic rain, snow, fog, or dust. (Actually, "acid precipitation" is a more precise description.) The pollutants are chiefly oxides of sulfur and nitrogen, and they come primarily from coal- and oil-burning power plants and industries and from automotive exhausts. When sulfur dioxide is absorbed into water vapor in the atmosphere, it becomes sulfuric acid. Sulfur dioxide contributes about two-thirds of the acids in the rain; about one-third come form nitrogen oxides, transformed into nitric acid in the atmosphere.

When the acids are washed out of the air by rain, snow, or fog, they change the pH (potential of hydrogen) factor of the soil and water, setting off a chain of chemical and biological reactions. The pH factor measures the acidity/alkalinity of a substance on a scale of 0 to 14. The average pH of normal rainfall is 5.6, but acid rainfalls with a pH of 2.4 – approximately the acidity of vinegar and lemon

juice – have been recorded. It is important to note that the pH scale is logarithmic, so that 4.0 is ten times more acidic than 5.0 and one hundred times more acidic than 6.0. Acid rain also coats the ground with particles of aluminum and toxic heavy metals such as cadmium and lead.

Once the pollutants are airborne, winds can carry them hundreds of miles, depositing them far from their source. Approximately half of the acid rain that falls on eastern Canada originates in the United States chiefly from the coal-burning power plants in the Midwest. This issue of acid precipitation on water bodies, forests, and wildlife are deadly. The problem is that acidity of a lake or stream need not increase much before it begins to disrupt the food chain.

Canada's Department of the Environment has reported that acid rain has already damaged some 14,000 lakes in the country, rendering them almost fishless; another 150,000 are in peril. Acid rains have also been linked to the disappearance or decline of fish populations in Scandinavia. Some 20% of Sweden's lakes are said to have been damaged by pollution, and much of Norway's fish population has been exterminated.

Acid rain harms soils and vegetation. It leaches toxic constituents like aluminum salts from the soil and kills microorganisms in the soil that break down organic matter and recycle nutrients through the ecosystem. Extensive forest damage has occurred in parts of North America, northern and western Europe, the USSR, and China. One can also see the corrosive effects of atmospheric acid on marble and limestone sculptures and buildings and on metals such as iron and bronze.

Acid rain also affects human health. Both sulfur dioxide and nitrogen oxide have been linked to the increased occurrence of heart disease, lung cancer, asthma, pneumonia, and bronchitis, primarily among children and the elderly. Acid rain is thought to contribute to at least 100,000 deaths a year in the United States.

Ironically, the dramatic increase in acid precipitation in recent decades is partly the result of an effort to curb air pollution. The U.S. Clean Air Act of 1970 restricted the deposit of specific pollutants over the surrounding countryside and set standards only for ground-level air quality. In order to keep air in local communities clean enough to meet air-quality standards, industries and power plants have built ever-taller smokestacks that discharge sulfur dioxide and other pollutants into the upper atmosphere. Stacks 1,000 feet (305 m) high are now a common sight; previously, stacks 200 to 300 feet (60 to 90 m) high were the norm. The situation is not unlike disposing of garbage by throwing it over your backyard fence. It still comes down, but not in your yard. Unfortunately, the farther and higher the noxious emissions go, the longer time they have in which to form acids by combining with other atmospheric components and moisture; thus, taller stacks have directly aggravated the acid rain problem.

Much of the responsibility for solving the acid rain problem lies with industry and government, but individuals can help by reducing their demand for energy. Various ways of conserving energy are discussed in a subsequent section, which deals with the greenhouse effect, but they also apply here. The solution to both the greenhouse effect and acid rain is to reduce the emission of pollutants into the atmosphere. We can do that by using less energy and by using it as efficiently as possible.

II. Give a brief summary of the text in English.

III. Put 5 questions to the text.

Variant 2

I. Translate the text in writing:

DEPLETION OF THE OZONE LAYER

Ozone, which is a noxious pollutant near the ground, is an essential chemical in the stratosphere. There, some 6 to 15 miles (10 to 24 km) above the ground, it forms a protective blanket, the ozone layer, which shields all forms of life on earth from overexposure to lethal ultraviolet (UV) radiation from the sun.

Emissions from a variety of chemicals are destroying the ozone layer. The primary culprit is the family of synthetic chemicals developed in 1931 and known as CFCs, combinations of carbon, fluorine, and chlorine atoms. These were initially hailed as perfect chemicals because they are nontoxic, noncorrosive. nonflammable, long-lasting, don't accumulate at ground level, and are relatively easy to manufacture.

CFCs are found in hundreds of products around the house. They are coolants for refrigerators, freezers, and air conditioners. They are aerosol spray propellants, and a component in foam packaging, home insulation, and upholstery. In liquefied form, they are used to sterilize surgical equipment and to clean computer chips and other microelectronic equipment.

Also implicated in the depletion of the ozone layer are halons, used in fire extinguishers, and carbon tetrachloride and methyl chloroform, used as solvents and cleaning agents. CFCs, however, are by far the most important. Over two billion pounds (900 million kg) of these chemicals are manufactured each year.

After the gases are released into the air, they rise through the lower atmosphere and, after a period of seven to fifteen years, reach the stratosphere. There, UV radiation breaks the molecules apart, producing free chlorine atoms. (Halons release bromine atoms.) Over time, a single one of these atoms can

destroy tens of thousands (if not a potentially infinite number) of ozone molecules. Bromine is even more destructive than chlorine.

Every Southern Hemisphere spring, beginning around September, the atmosphere over the Antarctic loses more and more ozone. In 1987, researchers discovered what is popularly termed a "hole" as big as the continental United States in the ozone layer over Antarctica, extending northward as far as populated areas of South America. It is not truly a hole, but depletion in the ozone layer is as much as 60%. The hole disappears in the summer, when the winds change and the ozone-deficient air mixes with the surrounding atmosphere. A less dramatic but still serious depletion of the ozone shield occurs over the North Pole.

A depleted ozone layer allows more UV radiation to reach the earth's surface. Although the exact consequences of that increase won't be known for years, it is almost certain to cause a dramatic rise in the incidence of skin cancers and eye cataracts. Some fear it may also damage the immune system of humans and other animals by impairing the cells that fight viral infections and parasitic disease. Because UV radiation also causes cell and tissue damage in plants, it is likely to reduce agricultural production severely. The most serious damage may occur in oceans. Increased amounts of UV adversely affect the photosynthesis and metabolism of the microscopic plants called phytoplankton that flourish just below the surface of the Antarctic Ocean. Phytoplankton are the base of the marine food chain and play a central role in the earth's carbon dioxide cycle.

Although ninety-three countries have indicated their intent to ban production of CFCs and halons by the year 2000, the destructive effects of these chemicals will continue for decades. The two most widely used forms of CFCs stay in the stratosphere for up to one hundred years. That means some of the first CFCs ever producted in 1931 are still in the stratosphere, breaking down ozone molecules. So even if use of the chemicals were to stop tomorrow, it would take the planet a century to replenish the ozone already lost.

II. Give a brief summary of the text in English.

III. Put 5 questions to the text.

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МЕТОДИЧНІ ВКАЗІВКИ
для СРС та навчальний матеріал з англійської мови

для студентів V та VI курсів
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Напрям підготовки – екологія
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та курортного господарства

Укладач: П'янова І.Ю.

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