

Passage 8

Pre-reading

Read the title of this article carefully. Then tick any topics from the list that you expect to find in this article.

- 1. The article will talk about war and peace.
- 2. The article will talk about chemical pollution.
- 3. The article will mainly describe the benefits of chemicals.
- 4. The article will mainly talk about the bad effects that animals can have on the environment.
- 5. The article will conclude that chemicals are not dangerous to the environment.
- 6. The article will show that the effects of chemicals often appear only slowly.
- 7. The article will discuss the problem of overpopulation.
- 8. The article will criticize the use of chemicals.
- 9. The article will show the ecological dangers of chemicals.

CHEMICALS: TIME BOMBS IN OUR ENVIRONMENT*

Introduction

1 In 1976 there was an explosion at a chemical plant in Seveso, Italy. After the explosion, small amounts of dioxin, a very dangerous chemical, escaped into the air. Animals began to die, people became sick, and the population of Seveso had to abandon their homes. In 1983, seven years after the accident, the land around Seveso was still contaminated by dioxin.

2 In 1983 the U.S government decided to close the small town of Times Beach, Missouri, and to buy the homes of all the residents. The reason? The land in Times Beach is contaminated with acids, dioxin, and other dangerous chemicals which are escaping from a toxic waste dump there.

3 These and many other similar incidents have one thing in common. They show that chemicals are polluting our environment and causing an extremely serious problem for a growing number of countries . According to many ecologists, this type of pollution is a problem that governments and other responsible authorities are not taking seriously enough.

*Kenneth J. Pakenhan, *Expectations: Language and Reading Skills for Students of ESL* (Englewood Cliff, New Jersey: Prentice-Hall, n.d.), pp. 202-213.

The Growing Problem

- 4 The chemical pollution of the environment is connected closely with the growth of the chemical industry between 1940 and the present. During this time, scientists who worked for chemical companies produced a large number of new chemicals which at first seemed very useful.
- 5 Because of the clear benefits of chemicals like DDT and 2,4,5-T, people in many countries began to use them. At first, the chemicals seemed to be great successes. In Sri Lanka, for example, DDT was used against the mosquitoes which carried malaria. In ten years the number of people who became ill with malaria was reduced by more than 95%. In other countries, DDT and other chemicals were used to control the insects that caused much damage to agricultural crops, such as cotton and corn. In the 1970s, 2,4,5-T was used by farmers and industrial companies in the United States. People quickly began to depend on these useful chemicals; farmers could not imagine life without them. If they did not have these chemicals, they believed, their crops would fail and they would lose a great deal of money.
- 6 However, after a short time of use, it became clear that the chemicals were disturbing the balance which exists in the environment. Scientists soon realized that chemicals like DDT killed useful insects as well as the harmful ones. It also became clear that some of the most harmful insects were quickly developing resistance to DDT. As a result, farmers had to use even stronger and more poisonous chemicals against the new “super-insects.” Another problem was that the chemicals did not disappear: They remained in the ground; they found their way into rivers, lakes, and oceans. They were absorbed into the bodies of fish and animals, and the animals began to suffer from new types of diseases. The

chemicals were poisoning them. Humans also began to experience **serious** health problems, especially in areas which were sprayed with 2,4,5-T. In these areas doctors reported an increase of heart disease.

7 Chemical pollution is not only caused by chemicals which are deliberately sprayed on land for some specific purpose. It is also caused by chemical waste that is carelessly or illegally dumped. Certain other substances are produced in the production of chemicals. These substances are often useless, and some of them are extremely dangerous. Dioxin, or TCDD, is such a by-product of the chemical industry. For some years, there were few laws that governed the dumping of dangerous chemical wastes. As a result, they now lie in dumps all over the industrial countries. Today the deadly chemicals are in the water and the soil of many communities; governments do not know exactly how many dangerous dumps exist. In fact, according to environmentalists, people today are continuing to dump dangerous chemical waste illegally in spite of strict new laws against dumping.

No Easy Answer

8 The solution to the problem of chemical pollution seems very clear: Governments must forbid the use of chemicals which damage the environment and which threaten animal and human life. The situation, however, is made more difficult by two factors. First, scientists disagree about the effects on humans of many chemicals; second, the chemical industry is extremely powerful and is a very important part of the economy of many countries.

9 It is difficult to be completely sure that a certain chemical leads to certain health problems. One reason for this uncertainty is that some effects may appear

only very slowly. Some types of cancer, for example, may need twenty years to develop. Another reason for the uncertainty is the methods which are used to test the chemicals. It is impossible, of course, to test the chemicals on human beings, so experiments are conducted with animals. However, some scientists, especially scientists who are working for industrial companies, criticize the animal experiments. They claim, for example, that the animals are exposed to very large amounts of the chemicals. These amounts are much greater than the amounts which a human would absorb during one lifetime.

10 It is difficult, therefore, to find definite proof that a chemical can cause illness or death. However, the majority of scientists who conduct independent research into the effect of chemicals on the environment believe that complete certainty is not needed. According to them, if a connection is found between a chemical and serious health problems in test animals, we must stop the use of that chemical. It is better to ban a chemical which may be safe than to use a chemical which may cause serious illness or death.

11 Economics, however, may be a much greater problem than scientific disagreement for people who want to protect the environment. It is clear that the chemical industry is an important business in many countries. If the government reduces the number of chemicals which are used today, the chemical industry will experience economic problems. Companies will reduce the number of people they employ. If unemployment increases and if the industry earns less money, the economy of the whole country will suffer. If a country's economy is bad, people will blame the government. Consequently, governments may be reluctant to pass laws that will immediately damage their economy.

12 Thus, short-term economic interests may be more important to some governments and companies than the possible long-term dangers to the health of their people. There is some evidence to support this belief. First, chemical producers often ignore research which shows that their products may be dangerous. For example, in 1970 the U.S. government stopped the use of 2,4,5-T, but only in homes and on farms, According to the government, it was possible that the chemical caused problems for pregnant women. The government, however, did not forbid the industrial use of the chemical. In 1979 the company that produced 2,4,5-T claimed that it was as safe as aspirin! In the same year, however, the U.S. government banned it completely. Second, the strange behavior of governments shows that profits are **often** more important for them than people. For example, the Swiss government allows the manufacture of chemicals, but does not permit toxic waste dumps in Switzerland. Dioxin and other toxic wastes which are by-products of the Swiss chemical industry have to be transported to dump in other countries. In 1972, the American government banned the use of DDT in the U.S., but American companies were able to continue to produce DDT and sell it to other countries. Does this mean that DDT is only dangerous for Americans? Are only Swiss people at risk from toxic waste? No, of course not. It means that the governments want the economic benefits of chemicals without the heavy responsibilities that go with them.

*Conclusion: A Program of Education for the Public **and for** Governments*

13 In spite of the strong opposition to new and stricter environmental laws, however, it is still possible to attack the problem of chemical pollution; but we must attack it from three directions. First, we need more independent research

into the effects of chemicals by scientists who are not paid by the government or by large industrial companies. Second, scientists need to educate the general public and inform them about the dangers of chemicals in the environment. If the public knows that a certain chemical threatens the health of their children, then it will put pressure on politicians in local and national governments. If the politicians want to remain in office, they will take action to correct the situation. Third, economists need to educate governments about the long-term economic costs of chemicals. It will be extremely expensive to clean areas of land which are contaminated by chemicals; it will be even more costly to give medical treatment to people who are suffering from serious illnesses after exposure to dangerous chemicals. If governments realize this, the short-term economic benefits of chemicals will seem much less attractive to them.

- 14 If we can put pressure on governments in these three ways, perhaps they will begin to behave more responsibly. They will perhaps pass new laws against pollution and enforce them strictly. Perhaps, then, the chemical producers will begin to behave more responsibly.

Main Ideas Check and Comprehension Check:

Paragraphs 1-3:

PARAGRAPH IDEA

- _____ An example of chemical pollution after an accident.
- _____ Chemical pollution is an extremely serious problem worldwide.
- _____ An example of chemical pollution from a toxic waste dump.

1. Chemical pollution is only a problem in the United States. T F
2. Some people think that governments are not doing enough to control chemical pollution. T F
3. It is easy to clean an area of land that is contaminated. T F
4. What is dioxin?
 - a. An area of Italy.
 - b. An extremely toxic substance.
 - c. A type of animal that scientists use in tests.

Paragraphs 4-7:

PARAGRAPH

IDEA

_____ A great deal of pollution comes from unsafe, and sometimes illegal, toxic waste dumps.

_____ It became clear that chemicals were damaging the environment and people's health.

_____ After World War II, the production of chemicals increased.

_____ After 1940, the growing chemical industry began to produce many chemicals which seemed very useful.

1. DDT was used only by farmers. T F
2. Many farmers believe that they cannot do without chemicals in their work. T F
3. Health problems were the only negative effects of the use of chemicals. T F
4. The controls on toxic waste dumps are not strict enough. T F

5. What happened to people who lived in areas which were sprayed with chemicals?
 - a. They all began to suffer from heart disease.
 - b. They experienced some minor illnesses.
 - c. They began to have serious health problems.
6. What does Paragraph 7 tell us about toxic waste dumps?
 - a. They are always in areas of the country that have no people.
 - b. New laws now mean that there is no problem with toxic waste dumps.
 - c. Some of the dumps are near people's homes.

Paragraphs 8-12:

PARAGRAPH

IDEA

- | | |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------|
| _____ | There are economic reasons for people's reluctance to stop the use of chemicals. |
| _____ | For a number of reasons, scientists cannot be 100% sure that a certain chemical causes a certain illness. |
| _____ | There is clear evidence that the economy is more important to governments than people's health. |
| _____ | We do not need to be 100% certain that a chemical is dangerous. We must ban it if we find evidence which only suggests that it is dangerous. |
| _____ | There are two factors that prevent an easy solution to the problem of chemical pollution. |

1. According to the passage, there is only one reason why governments are reluctant to stop the production or use of certain chemicals. T F
2. In 1970 there was evidence which suggested that 2,4,5-T was unsafe. T F
3. Why does the writer mention cancer?
 - a. The writer wants to show the serious health problems which chemicals can cause.
 - b. The writer wants to show that the negative effects of chemicals often do not appear until many years later.
 - c. The writer wants to prove without doubt that chemicals can have extremely serious effects on human health.
4. Why does the writer use the example of the company which claimed that 2,4,5-T was as safe as aspirin?
 - a. To show that chemicals really can benefit us, as does aspirin.
 - b. To show that producers ignore studies which show problems with their chemicals.
 - c. To show that the government did not act correctly.
5. Why does the writer use the examples of the U.S. government and the Swiss government?
 - a. To show that chemicals like DDT, dioxin, and 2,4,5-T are extremely dangerous to human health.
 - b. To show that money is more important to these governments than people's health.
 - c. To show that a number of governments do not believe that chemicals are a real problem.

Paragraphs 13-14

PARAGRAPH

IDEA

_____ The writer concludes that it is possible to solve the problem of chemical pollution.

_____ The writer suggests that we need to do three things to solve the problem of chemical pollution.

1. The writer does not believe that it is possible to solve the problem of chemical pollution. T F
2. According to the writer, the public does not know enough about the dangers of chemical pollution. T F
3. What does the writer believe about governments?
 - a. They will not ban the use of chemicals unless the public puts pressure on them.
 - b. They fully realize the long-term economic costs of chemical pollution.
 - c. They are already behaving in an extremely responsible way.
4. What is *not* part of the writer's solution to the problem of chemical pollution?
 - a. We must teach people about the effects of chemical pollution.
 - b. We must put pressure on governments.
 - c. We must show the long-term costs of pollution.
 - d. We must show the economic benefits of chemicals.

Passage 9

Pre-reading

Answer the following questions.

1. Design your ideal learning situation.

2. How much time do you spend in lecture classes?

3. How are your lecture classes?

4. How much time do you spend in library?

5. Skim the passage to see if the author agrees with lectures

COLLEGE LECTURES: IS ANYBODY LISTENING?*

(by David Daniels)

A former teacher of mine, Robert A. Fowkes of New York University, likes to tell the story of a class he took in Old Welsh while studying in Germany during the 1930s. On the first day the professor strode up to the podium, shuffled his notes, coughed, and began, "*Guten Tag, Meine Damen und Herren*" ("Good day, ladies and gentlemen"). Fowkes glanced around uneasily. He was the only student in the course.

Toward the middle of the semester, Fowkes fell ill and missed a class. When he returned, the professor nodded vaguely and to Fowkes's astonishment, began to deliver not the next lecture in the sequence but the one after. Had he, in fact, lectured to an empty hall in the absence of his solitary student? Fowkes thought it perfectly possible.

Today, American colleges and universities (originally modeled on German ones) are under strong attack from many quarters. Teachers, it is charged, are not doing a good job of teaching and students are not doing a good job of learning. American businesses and industries suffer from unenterprising, uncreative executives educated not to think for themselves but to mouth outdated truisms the rest of the world has long discarded. College graduates lack both basic skills and general

* Jan M. Youga, Mark H. Withrow and Janis Flint-Ferguson, *Readings Are Writings* (New Jersey: Prentice Hall, Inc., 1996), pp. 251-255.

culture. Studies are conducted and reports are issued on the status of higher education. But any changes that result either are largely cosmetic or make a bad situation worse.

One aspect of American education too seldom challenged is the lecture system. Professors continue to lecture and students to take notes much as they did in the thirteenth century, when books were so scarce and expensive that few students could own them. The time is long overdue for us to abandon the lecture system and turn to methods that really work.

To understand the inadequacy of the present system, it is enough to follow a single imaginary first-year student—let's call her Mary—through a term of lectures on, say, introductory psychology (although any other subject would do as well). She arrives on the first day and looks around the huge lecture hall, taken a little aback to see how large the class is. Once the hundred or more students enrolled in the course discover that the professor never takes attendance (how can he?—calling the role would take far too much time), the class shrinks to a less imposing size.

Some days Mary sits in the front row, from where she can watch the professor read from a stack of yellowed notes that seem nearly as old as he is. She is bored by the lectures, and so are most of the other students, to judge by the way they are nodding off or doodling in their notebooks. Gradually she realizes the professor is as bored as his audience. At the end of each lecture he asks, "Are there any questions?" in a tone of voice that makes it plain he would much rather there weren't. He needn't worry—the students are as relieved as he is that the class is over.

Mary knows very well she should read an assignment before every lecture. However, as the professor gives no quizzes and asks no questions, she soon realizes she needn't prepare. At the end of the term she catches up by skimming her notes and

memorizing a list of facts and dates. After the final exam, she promptly forgets much of what she has memorized. Some of her fellow students, disappointed at the impersonality of it all, drop out of college altogether. Others, like Mary, stick it out, grow resigned to the system and await better days when, as juniors and seniors, they will attend smaller classes and at last get the kind of personal attention real learning requires.

I admit this picture is overdrawn—most universities supplement lecture courses with discussion groups, usually led by graduate students, and some classes, such as first-year English, are always relatively small. Nevertheless, far too many courses rely principally or entirely on lectures, an arrangement much loved by faculty and administrators but scarcely designed to benefit the students.

One problem with lectures is that listening intelligently is hard work. Reading the same material in a textbook is a more efficient way to learn because students can proceed as slowly as they need to until the subject matter becomes clear to them. Even simply paying attention is very difficult; people can listen at a rate of four hundred to six hundred words a minute, while the most impassioned professor talks at scarcely a third of that speed. This time lag between speech and comprehension leads to daydreaming. Many students believe years of watching television have sabotaged their attention span, but their real problem is that listening attentively is much harder than they think.

Worse still, attending lectures is passive learning, at least for inexperienced listeners. Active learning, in which students write essays or perform experiments and then have their work evaluated by an instructor, is far more beneficial for those who have not yet fully learned how to learn. While it's true that techniques of active listening, such as trying to anticipate the speaker's next point or taking notes

selectively, can enhance the value of a lecture., few students possess commonly, students try to write everything down and even bring tape recorders to class in a clumsy effort to capture every word.

Students need to question their professors and to have their ideas taken seriously. Only then will they develop the analytical skills required to think intelligently and creatively. Most students learn best by engaging in frequent and even heated debate, not by scribbling down a professor's often unsatisfactory summary of complicated issues. They need small discussion classes that demand the common labors of teacher and students rather than classes in which one person, however learned, propounds his or her own ideas.

The lecture system ultimately harms professors as well. It reduces feedback to a minimum, so that the lecturer can neither judge how well students understand the material nor benefit from their questions or comments. Questions that require the speaker to clarify obscure points and comments that challenge sloppily constructed arguments are indispensable to scholarship. Without them, the liveliest mind can atrophy. Undergraduates may not be able to make telling contributions very often, but lecturing insulates a professor even from the beginner's naive question that could have triggered a fruitful line of thought.

If lectures make so little sense, why have they been allowed to continue? Administrators love them, of course. They can cram far more students into a lecture hall than into a discussion class, and for many administrators that is almost the end of the story. But the truth is that faculty members, and even students, conspire with them to keep the lecture system alive and well. Lectures are easier on everyone than debates. Professors can pretend to teach by lecturing just as students can pretend to learn by attending lectures, with not one the wiser, including the participants.

Moreover, if lectures afford some students an opportunity to sit back and let the professor run the show, they offer some professors an irresistible forum for showing off. In a classroom where everyone contributes, students are less able to hide and professors less tempted to engage in intellectual exhibitionism.

Smaller classes in which students are required to involve themselves in discussion put an end to students' passivity. Students become actively involved when forced to question their own ideas as well as their instructor's. Their listening skills improve dramatically in the excitement of intellectual give and take with their instructors and fellow students. Such interchanges help professors do their job better because they allow them to discover who knows what-before **final** exams, not after. When exams are given in this type of course, they can require analysis and synthesis from the students, not empty memorization. Classes like this require energy, imagination, and commitment from professors, all of which can be exhausting. But they compel students to share responsibility for their own intellectual growth.

Lectures will never entirely disappear from the university scene both because they seem to be economically necessary and because they spring from a long tradition in a setting that rightly values tradition for its own sake. But the lectures too frequently come at the wrong end of the students' educational careers--during the first two years, when they most need close, even individual, instruction. If lecture classes were restricted to junior and senior undergraduates and to graduate students, who are less in need of scholarly nurturing and more able to prepare work on their own, they would be far less destructive of students' interests and enthusiasms than the present system. After all, students must learn to listen before they can listen to learn.

A. Answer the following questions.

1. What does the author argue ?

2. Lecture classes do not benefit students, but why are they preferred?

3. What are the disadvantages of lecture classes?

4. Why do lecture classes become smaller after their first day?

5. What kind of class makes students be responsible for their own learning?

6. Why are not lecture classes suitable for first-year students?

B. Without looking back to the text fill the following blanks with suitable word or words.

Lectures will never entirely 1 from the university scene both because they seem to be 2 necessary and because they spring from a long tradition in a setting 3 rightly values tradition for its own sake. But the lectures too frequently come at the wrong end of the 4's educational careers—during the first two years, 5 they most need close, even 6, instruction. If lecture classes were restricted to junior and senior undergraduates 7 to graduate students, 8 are less in need of scholarly nurturing and more able to prepare work on their own, they would be far less 9 of students' interests and enthusiasms than the present system. After all, students must learn to listen 10 they can listen to learn.

Passage 10

Pre-reading

Take a few minutes to scan this passage to find the answers to the following questions.

1. Dr. Werner P. Koella works for _____.
2. EEG stands for _____.
3. PCPA is _____.
4. Serotonin is _____.
5. Cats normally sleep _____ hours a day.
6. 5-hydroxytryptophan is _____.

A GOOD NIGHT'S SLEEP*

1 The would-be sleeper who refights his daily battles in bed—or rehearses tomorrow's problems—finds it hard to fall asleep. Then he starts worrying about his inability to sleep, which increases his insomnia, which increases his worries, which In a new development that may help the insomniac to break

*Louise Hirasawa and Linda Markstein, *Developing Reading Skills-advanced* (Rowley, Massachusetts: Newbury House Publishers, Inc., 1974), pp. 35-39.

this vicious cycle, Dr. Werner P. Koella of the Worcester Foundation for Experimental Biology has discovered a chemical in the brain that may control normal sleep.

2 The substance, known as serotonin, is one of a number of so-called neurohormones in the brain that researchers suspect play an important part in controlling the mind and the emotions. Such chemicals, researchers have learned, assist in transmitting nerve impulses from one nerve cell to another. Serotonin, Koella notes, is produced in particularly high concentrations in the hypothalamus, the “primitive” lower part of the brain and the brain stem, which joins the brain to the top of the spinal cord and is known to contain the centers controlling the level of consciousness. Conceivably, Koella reasoned, serotonin was the transmitter substance in the brain stem and hypothalamus that regulated sleep.

3 In preliminary experiments, Koella found that giving serotonin to cats produced signs of sleep. Electrode leads were implanted in the cats’ brains and attached to an EEG [electroencephalogram] machine to record the brain waves: next serotonin was injected directly into the brain or an artery in the neck. The pupils of the animals’ eyes narrowed and the electroencephalograms showed “slow” waves characteristic of deep sleep within five to ten minutes.

4 More recently, Koella deprived cats of serotonin. The animals, again equipped with implanted electrodes, were given PCPA, a drug that blocks the formation of serotonin. They were then placed in small compartments fitted with one-way mirrors and watched round the clock.

5 Normally cats sleep about fifteen hours a day; but Koella’s cats, after receiving PCPA, spent about 30 minutes of each day sleeping. Most of the time,

their EEG's showed the brainwave patterns of arousal. Occasionally the cats would curl up as if to go to sleep, but would soon get back on their feet to wander about. The animals showed signs of irritability and often meowed complainingly after a few days of sleep deprivation, but had normal reflexes. The effects of the PCPA wore off eight days to two weeks after administration of the drug; the cats returned to their normal sleeping patterns as serotonin levels in their brains rose again.

6 Koella believes that at least some types of chronic insomnia may be caused by a drop in brain-serotonin levels. The Worcester physiologist is now working on chemical ways to raise the brain's serotonin levels and produce, in his words, "a truly physiological sleeping pill." Synthetic sleeping pills, such as barbiturates, bring sleep, but at a price: they depress the central nervous system, reduce heart action and respiration—and they can become habit-forming or even addictive.

7 In one promising experiment toward the goal of letting the body "make its own pill," Koella has found that administration of 5-hydroxytryptophan, the chemical substance from which the body derives serotonin, will quickly restore a normal sleeping pattern to cats lacking in serotonin.

Choose the best answer.

1. The main idea of this article is _____.

- a. Dr. Koella has done many experiments with cats
- b. Dr. Koella has discovered a chemical called serotonin which might be the body's natural hormone for controlling sleep
- c. Serotonin might be a better sleeping aid because it is a natural hormone

2. In paragraph 1, the second sentence ends with several periods (. . .) to show that _____.
- a. the cycle being described continues on and on without end
 - b. the author did not know how to finish the sentence
 - c. a typographical error was made
3. The brain stem is located (paragraph 2) _____.
- a. in the hypothalamus
 - b. between the brain and spinal cord
 - c. in the transmitter nerve cells
4. Paragraph 2 explains _____.
- a. where the hypothalamus is located
 - b. why Dr. Koella chose the experiment with serotonin
 - c. important information about serotonin
5. The information in paragraph 5 indicates that PCPA was responsible for _____.
- a. a lack of sleep
 - b. the cats' meowing
 - c. normal sleeping patterns
6. In paragraph 6, Dr. Koella implies, *but does not directly state*, that _____.
- a. he has developed a natural sleeping pill which will raise the serotonin level in the body
 - b. a natural sleeping pill would be superior to synthetic pills because it would have no bad effects on the body
 - c. sleeping pills are habit-forming

7. The language used in this article indicates that Dr. Koella _____.

- a. is positive that serotonin controls sleep
- b. is quite uncertain whether serotonin controls sleep
- c. thinks that serotonin might control sleep

8. To get a good night's sleep, Dr. Koella is _____ a(n) _____ sleeping pill.

Fill in the spaces with one word from Group A and one word from Group B.

A: 1) using 2) developing 3) sleeping 4) giving

B: 1) cat 2) EEG 3) artificial 5) natural

9. "The would-be sleeper who refights his daily battles in bed—or rehearses tomorrow's problems—finds it hard to fall asleep."

The underlined words mean _____.

- a. he cannot fall asleep but he wants to
- b. he wants to fall asleep, and he does
- c. he doesn't want to fall asleep, and he doesn't

10. "They were . . . watched around the clock" means that _____.

- a. the cats walk around a clock
- b. the cats were watched 24 hours a day
- c. there was a round clock in the cats' compartments

11. "Synthetic sleeping pills bring sleep, but at a price: they can be habit-forming or even addictive." The underlined words mean _____.

- a. not easily
- b. they are very expensive
- c. with possible dangerous effects