高等学校专业英语系列教材

环境工程专业英语

ENGLISH IN ENVIRONMENTAL ENGINEERING

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前　言

随着我国改革开放的深入、对外交流的发展以及计算机网络技术的日益发展和成熟，现代社会对科技人员的外语能力提出了更高的要求。过去以阅读为主的教学要求和以获得专业信息为目的的教学目标已经明显滞后。据有关单位针对高校英语教学重点问题在硕士研究生和博士研究生中进行的问卷调查结果统计，超过80%的学生认为应加强听力理解、会话、翻译和写作等教学内容，以提高他们的对外交流能力。因此，在编写非英语专业英语教材时应以提高学生的语言能力为主要目标和出发点，结合专业特色，以多样的教学形式和丰富的教学内容，满足学生听、说、读、写等实用目的的要求。

本书采用全方位的英语教学理念设计，强调语言运用能力的培养，同时面向课堂，突出实用性和适用性；引入分组讨论、小组报告等多种教学方法，有效地扩充环境工程专业学生的专业英语词汇量并提高其听、说、读、写等交流能力。

本书在体例上以Unit为单位，一共12个Unit，内容涵盖了水、气、固、声、热、生态等各种环境污染的特点和控制方法，还包括了环境管理和环境评价等内容。书中每个Unit包括Listening, Reading, Discussion, Writing and Report等4个部分。其中，Reading部分又由浅入深分为2篇课文，同时，给出了课文中出现的新的单词、短语的释义，并对课文中的疑难词语或句子进行了讲解。各个部分都有习题供学习者练习，以巩固学习成果。每个Unit独立讲述某一个方面的内容，方便教师根据需要灵活掌握授课重点。全书的语言材料均出自近年来出版的原版教材、专著及其他文献资料。

本书可作为环境工程专业研究生专业英语教材，也可供本学科本科生及相关学

科本科生、研究生、科研人员以及相关人员自学参考，还可用作培训教材。

本书由刘洋负责编写第一、二、三、八、十一、十二单元以及所有的听力、讨论部分；王耀琴负责编写第四、五、六、七单元以及所有的阅读习题和写作部分；王桂晨负责编写第九单元；董海山负责编写第十单元。全书由刘洋统稿。

本书的听力材料由 Daniel Crevier 先生（加拿大）校对并录音，在此向他表示深深的谢意。

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囿于编者的知识背景与见识，加之编写时间仓促，书中难免有疏漏与不妥之处，恳请广大读者不吝赐教。

编　者

2008 年 7 月

Contents

UNIT 1 INTRODUCTION

Objectives:

1. Establish comfort with listening comprehension and round table discussion.
2. Build and incorporate vocabulary into active use.
3. Understand fundamental concepts and terms of environmental engineering.

1. LISTENING

Warming up: *Put these words and phrases into Chinese.*

pollution _____
environmental slogans _____
soil erosion _____
overgrazing _____
deforestation _____
carbon dioxide _____
conservationists _____
sequoia _____

Exercise 1

Directions: *You will hear a recorded passage. Listen carefully and choose the right answer to each statement based on what you have just heard. The passage will be read twice.*

A. True or false.

( ) 1) Agricultural activities can produce soil erosion.
( ) 2) We shouldn't build a highway or plow a field to prevent erosion.
( ) 3) Shortly before Earth Day 2001, President Bill Clinton praised John Muir, one of the country's first conservationists.
( ) 4) Another human activity that damages the land is forestation.
( ) 5) Scientists haven't even discovered all the organisms living in the tropical rain forest.

B. Summarize the passage you have heard into 1 paragraph with no less than 50 words.

2. READING

Part I Some Important Concepts

Environment is the physical and biotic habitat which surrounds us; that which we can see, hear, touch, smell, and taste.

System, according to Webster's dictionary, is defined as "a set or arrangement of things so related or connected as to form a unit or organic whole; as a solar system, irrigation system, supply system, the world or universe".

Pollution can be defined as an undesirable change in the physical, chemical, or biological characteristics of the air, water, or land that can harmfully affect the health, survival, or activities of humans or other living organisms.

Interaction of Systems

A number of different environmental problems are associated with water, air, or land systems. Many of these problems will apply only within one of these systems, justifying the breakdown into these categories. Such a classification is also useful for easier comprehension of related problems within one system. Moreover, it is sensible because, for managerial and administrative reasons, such subfields as air pollution, water supply, wastewater disposal, and solid waste disposal are often dealt with separately by governmental agencies.

Unfortunately, many important environmental problems are not confined to an air, water, or land system, but involve interactions between systems. A current example is the acid rain problem stemming from the emission of sulfur dioxide and nitrogen oxide gases into the atmosphere from the stacks of generating stations, smelters and automobile exhausts. These gases are then transported by air currents over wide regions. Rainfall "washes them out",

creating acid rain which is harmful to aquatic life, forests, and agricultural crops. Two examples of interaction between systems that cause major environmental disturbances are presented — the buildup of atmospheric carbon dioxide, a global problem, and the acid rain problem, normally of regional nature.

Environmental Disturbances

Many major improvements to our standard of living can be attributed to the application of science and technology.

With these improvements, however, have come disturbing side effects, such as lost arable land, disappearing forests, environmental pollution, and new organisms resistant to controls. Many effects originally considered to be just nuisances are now recognized as potential threats to nature and to humans. In an agrarian society, people lived essentially in harmony with mature, raising food, gathering firewood, and making clothing and tools from the land. The wastes from animals and humans were returned to the soil as fertilizer. Few, if any, problems of water, land, or air pollution occurred.

The cities of ancient times, particularly those of the Roman Empire, had system to supply water and to dispose of wastes. The aqueducts supplying the ancient city of Rome (population about 1 million) with safe water from the Cloaca Maxima, the best known and one of the earliest sewers to be built, are examples of such systems. The municipal technology of ancient cities seems to have been forgotten for many centuries by those who built cities throughout Europe. Water supply and waste disposal were neglected, resulting in many outbreaks of dysentery, cholera, typhoid, and other waterborne diseases. Until the middle of the nineteenth century, it was not realized that improper wastes disposal polluted water supplies with disease-carrying organisms.[1] The industrial revolution in nineteenth-century Europe and North America aggravated the environmental problems since it brought increased urbanization with the industrialization. Both phenomena, urbanization and industrialization, were and are fundamental causes of water and air pollution which the cities of that time were unable to handle.

Exercise 2

A. Put the following words and phrases into Chinese.

environmental disturbances _____

interaction of systems _____

sulfur dioxide _____

nitrogen oxide _____

acid rain _____

industrialization _____

B. Translate the following sentences into Chinese.

1) Environment is the physical and biotic habitat which surrounds us; that which we can see, hear, touch, smell, and taste.

2) Pollution can be defined as an undesirable change in the physical, chemical, or biological characteristics of the air, water, or land that can harmfully affect the health, survival, or activities of humans or other living organisms.

3) With these improvements, however, have come disturbing side effects, such as lost arable land, disappearing forests, environmental pollution, and new organisms resistant to controls. Many effects originally considered to be just nuisances are now recognized as potential threats to nature and to humans.

Part II The Past, Present and Future of Environmental Engineering Research

Environmental engineering is a branch of engineering concerned with protecting the environment from the potentially deleterious effects of human activity, protecting human populations from the effects of adverse environmental factors, and restoring environmental quality for ecological and human well-being. Traditionally, the environmental engineer has analyzed environmental systems and designed plans, criteria and technologies for the use of air, water, and land.

Currently, environmental engineering research is focused on the fundamental and dynamic factors influencing the detection, transformation, fate and transport of contaminants in both natural and engineered environments. Environmental engineers are involved in a myriad of activities such as quantifying trace levels of chemicals in complex matrices, characterizing microbial communities, identifying key microbial populations and elucidating their functions, developing a broad suite of biological, chemical and physical treatment technologies to meet

stringent regulations, and modeling biogeochemical phenomena at various scales and in multiple phases. In addition, environmental engineers, with their understanding of contaminant behavior in the environment, play a key and leading role in the characterization of risk and thus, in the design of effective strategies and regulations to manage residuals.

In looking to the future, environmental engineers will continue to search for creative and economical ways to limit the release of contaminants into the environment, to develop highly sensitive techniques to track pollutants once released, and to find effective methods to remediate spoiled resources.[2] Environmental engineers will also continue to be the vital link between scientific discovery, technological development and the societal need for protecting human health and ecological integrity. The emphasis of their work, however, will shift from managing wastes after they are generated to minimizing the release of residuals by altering production processes and capturing the resource value of wastes through recovery, recycling and reuse.[3] Environmental engineers will be critical members of manufacturing teams where the design and production of goods are developed in full consideration of their environmental impacts during production, use and at the end of their useful life.

At the heart of environmental engineering research, past, present, and future, is the study of biocomplexity. Since exclusive reliance on technology will not provide the extensive range of protective solutions needed, environmental engineering research will find strategies that reintegrate and synchronize human activities with natural cycles and processes. Environmental engineers have the unique set of multidisciplinary skills to find ways that allow for coordinated industrial and economic development, urban redevelopment, and ecological preservation and restoration. Since this set of skills rests on the detailed study of environmental phenomena, environmental engineering research promises to uncover new means of material production, to improve the efficiency of engineered processes, and to reveal more savvy ways of managing carbon and utilizing energy. These advances will involve greater use of molecular tools, tools that environmental engineers are helping to adapt and apply to environmental conditions.

Exercise 3

A. Fill in the blanks with the words given below. Change the forms if necessary.

harmonize	environment	implement	attach	hostility	cling
integrity	sustainable	solution	visible	atmosphere	

1) The _____ is seriously threatened by pollution.

2) There is a(n) _____ of peace and calm in the country quite different from the atmosphere of a big city.

3) I felt his feelings of _____, when I saw him.

4) They _____ together when the time came to part.

5) The old Roman walls may still be seen, but not in their _____.

6) The pilot _____ severe injuries when his plane crashed.

7) Recourse to arms is not the best _____ to a quarrel between two countries.

8) She is deeply _____ to her young brother.

9) The aircraft turned back because of poor _____.

10) The singers began to _____ the new song.

11) The committee's decisions will be _____ immediately.

B. Translate the following paragraph into Chinese.

Toxic air and water pollutants, along with mountains of solid and hazardous wastes, are becoming overwhelming problems in industrialized countries. We produce hundred of millions of tones of these dangerous materials annually, and much of it is disposed of in dangerous and irresponsible ways. No one wants this noxious stuff dumped in his or her own backyard, but too often the solution is to export it to someone else's. We may come to a political impasse where our failure to decide where to put wastes or dispose of them safely will close down industries and result in waste being spread everywhere. The health effects of pollution, toxic wastes, stress and the other environmental ills of modern society have become a greater threat than infectious diseases for many of us in industrialized countries.

Words and Phrases

biotic	*adj.* 生物的，关于生命的
habitat	*n.* (动植物的)生活环境，产地，栖息地，居留地
breakdown	*n.* 分解，细目分类
sulfur dioxide	二氧化硫
aquatic	*adj.* 水生的，水栖的，水的
carbon dioxide	二氧化碳
be attributed to	归因于

side effect	副作用
arable	*adj.* 可耕的，适于耕种的
agrarian	*adj.* 土地的，耕地的，农业的
dysentery	*n.* 痢疾
cholera	*n.* 霍乱
typhoid	*n.* 伤寒症
	adj. 伤寒的，斑疹伤寒症的
waterborne diseases	水传染疾病
deleterious	*adj.* 有害的，有毒的
contaminate	*vt.* 污染
myriad	*n.* 无数，无数的人或物
microbial	*adj.* 微生物的，由细菌引起的
elucidate	*vt.* 阐明，说明
biocomplexity	*n.* 生物复杂性
synchronize	*v.* 同步
multidisciplinary	*adj.* 多学科的，有关各种学问的
restoration	*n.* 恢复，修补，重建
savvy	*adj.* 精明的，明智的，有理的

Notes

1) Until the middle of the nineteenth century, it was not realized that improper wastes disposal polluted water supplies with disease-carrying organisms. 直到19世纪中期，人们才认识到不恰当的废物处理方式会使致病生物进入供水系统，使其受到污染。

2) In looking to the future, environmental engineers will continue to search for creative and economical ways to limit the release of contaminants into the environment, to develop lightly sensitive techniques to track pollutants once released, and to find effective methods to remediate spoiled resources. 展望未来，环境工程师将致力于继续寻求富有创意且经济实惠的方法对排放到环境中的污染物进行控制，发展灵敏性更高的技术手段来追踪污染物的排放情况，同时，发掘对被破坏资源的有效的补偿方法。

3) The emphasis of their work, however, will shift from managing wastes after they are generated to minimizing the release of residuals by altering production processes and capturing