

# 农业资源与 环境专业英语

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黑龙江教育出版社

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## 前 言

《农业资源与环境专业英语》是帮助学生学习和掌握阅读,提高专业英语能力的教材。当前,尽管大学生普遍重视英语学习,但对于专业英语仍比较陌生,缺乏独立阅读专业英语文献的能力,用英语写科技论文更加困难。因此,如何增强学生对专业英语的重视,提高专业英语的学习能力,是当前专业英语教学中的一个重要任务。

当前,可持续发展已成为时代发展的主题,而资源与环境又是可持续发展的基础,可持续发展的实现要求全人类共同行动起来,保护人类赖以生存的环境。因此,为了使环境科学、环境工程、农业资源与环境专业以及其他相关专业的学生都能掌握环境保护的一些基础知识和基本原理,熟悉科技交流的表达方式,以便能顺利阅读英文环境科技读物,更大程度地丰富专业知识,多层次、多角度了解全球环境科技信息,把握国内外科技进展动态,我们编写了这本资源与环境方面的双语教材,力求为读者提供一本体系完整、知识全面、通俗易懂的环境科学方面的阅读材料。本书可作为高等院校学生专业英语教材,也可作为研究生的教学参考用书或自学教材。

本书编写的主旨是提高学生正确、快速地阅读英语科技文

献的能力,掌握一定数量的重要专业词汇。本书共分 15 个单元,每个单元均由 Part A 和 Part B 两部分组成,Part A 为精读部分,重点介绍环境科学、环境工程、资源的可持续利用等方面的基础知识和基本原理;Part B 提供与 Part A 相应的背景知识,是 Part A 的续篇,以进一步拓宽课文内容。根据 Part A 与 Part B 的内容,文后配有注释、重要词汇和短语。

本书在编写过程中参考了国内外环境科学、环境工程、农业资源与利用等方面的期刊、报纸和专家学者的著作、教材、研究成果,如钱家忠、黄显怀两位老师编写的、由合肥工业大学出版社出版的《环境科学与工程专业英语》及王旭梅老师编写的、由哈尔滨工程大学出版社出版的相关书籍,在此不一一列举,谨向原作者和出版社表示衷心的感谢!

本书由东北农业大学资源与环境学院闫雷副教授编写。单德鑫老师为本书的编写提供了大量的资料,并提出了宝贵的意见,李晓亮、侯利园、白钰、袁彦斌、李碧莹等同学做了大量的文字校对和编辑工作,在此一并表示感谢。

由于编写时间仓促,加之编者水平有限,书中错误与不当之处在所难免,恳请读者批评指正。

编 者

2009 年 6 月

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# Unit 1

## Part A Introduction to Environmental Science

### What is Environmental Science?

Environmental science is the discipline that is concerned with identifying and diagnosing environmental impacts. Environmental scientists first try to understand the patterns or impact or change in the natural environment caused by various human activities. Once, they understand what is occurring, environmental scientists then search for the specific cause or causes. Often, they can also get involved in seeking solutions as well.

### Solutions to Environmental Problems

While environmental science is critical to understanding the impact of human activities on the natural environment, societies often turn to environment policy, environmental education, and environmental technology for implementing solutions. Both environmental policy and education are concerned with changing human behavior. Environmental policy does so in a more direct, or controlling manner. The Clean Air Act, for example, specifies the allowable levels of certain kinds of gases, which can be released by industrial facilities. Environmental education, on the other hand, seeks to change human

behavior in more subtle ways. Educating the average consumer about the effects of air pollution from automobiles, for example, may lead some individuals to change their behavior and use less polluting forms of transportation such as walking, bicycle, or public transportation.

Lastly, environmental technology refers to solving environmental problems by using or substituting tools, techniques, or processes that have less environmental impact. For example, probably the most well known type of environmental technology is the catalytic converter, which is attached to the exhaust system and neutralizes the gases that are emitted by the engine when gasoline is burned or combusted. To solve a specific environmental problem, societies often turn to environmental policy, education or technology, or a combination of any or all of the three.

## **The Environment as a System**

To better understand the natural environment, the impacts that humans are having on the environment, and ways in which humans can alter their behavior and technologies to reduce environmental impact, it is useful to think of nature or natural environment from a "systems" perspective. A system can be viewed as a group of interacting, interrelated, or interdependent elements forming or regarded as forming a collective entity.

Think of the natural environment as a system, which is composed of four parts or components, each with its own unique form, arrangement, characteristics and dynamic. These four subsystems in-

clude:

- Atmosphere—blanket of gases that surround the earth or the gaseous earth;
- Lithosphere—the solid earth, composed of rocks and minerals;
- Hydrosphere—waters of the earth or liquid earth;
- Biosphere—living earth, composed of plants, animals, insects, and all living things except humans.

Remember we said that our language suggests that humans are not part of the natural environment? Humans make up their own subsystem, known as the sociosphere, which includes all people on the earth and all human activities. Kenneth Boulding, a well-known economist described the sociosphere as “The social system consists of all human beings on the planet and all their interrelationships, such as kinship, friendship, hostility, status, exchange, money flows, conversations, information outputs and inputs, and so on. It includes likewise the contents of every person’s mind and the physical surroundings, both natural and artificial, to which he relates. This social system clings to the surface of the earth, so that it may appropriately be called the sociosphere, even though small fragments of it are now going out into space. The sociosphere thus takes its place with the lithosphere, the hydrosphere, the atmosphere, the sociosphere, and so on as one of the systems which enwrap this little globe. It has strong inter-relationships with the other spheres with which it is mingled and without which it could not survive. Nevertheless, it has a dynamic and integrity of its own. It is rather thin in Antarctica, although pres-

ent there; it is very dense in New York. It is a network rather than a solid sphere or shelf, yet no part of the earth's surface is very far from it. It is a system of enormous complexity, yet not wholly beyond our comprehension."

### **Important Environmental system Characteristics**

First, the four environmental subsystems—atmosphere, lithosphere, hydrosphere and biosphere together with the sociosphere, are part of a large, interconnected, inextricably linked system called the earth. Anything that happens in one of these systems affects some other elements or phenomena in another system.

Second, these subsystems are anything but static. There are continual interactions and transfers of energy, chemicals, and materials between these four subsystems. Some of these transfers, such as rain, are visible to humans. Others, such as the breakdown of chemicals from former living organisms as they decompose are not.

Third, there is continual change throughout the subsystems. In fact, the only constant is change. Some of these changes are natural. Some of these changes are caused by human activities.

### **Environmental Impact**

Humans have impacted the environment for a long time. Some of this impact are deliberate. Clearing grassland to plant crops is a deliberate alteration of the environment and if the decision is whether to have food to eat or starve, or alter the natural environment, this is a pretty easy decision for most, if not all, humans to make. Howev-

er, at the same time, there may be unintended environmental impacts with clearing fields. Depending on the slope of the ground, valuable topsoil may run off into nearby waterways, thereby over time making the field less productive for food and possibly choking waterways with sediment.

## **Environmental Science Emerged Historically**

Humans have been altering nature or the nature environment for a long, long time. Prehistoric hunters used fire to clear fields to attract wild animals to the young and tender shoots of grass and other types of vegetation. Human interaction with, and deliberate use, of the natural environment goes back a long way. At some point, though concerns about the indirect or unintended impacts of human use of or interaction with the environment began to emerge.

In the thirteenth century, we began to see concern expressed in England about the unintended impacts of using wood and coal to heat homes. The smoke from wood and coal fires, both within and outside the house, is perhaps the earliest recorded example of pollution. Over the next several hundred years, legislation, parliamentary studies, and literary comments appeared sporadically in England. By the early 1800s the smoke nuisance in London and other English cities was of sufficient public concern to prompt the appointment in 1819 of a Select Committee of the British Parliament to study and report upon smoke abatement.

Nonetheless, the number of air pollution incidents continued to increase. In 1873 an air pollution episode occurred in London where

several thousand people died and in the autumn of 1909 in Glasgow, Scotland it was estimated that 1,063 deaths were attributed to noxious air conditions. Concern about air pollution culminated in December 1952 in London, when the deaths of some 4,000 people were attributed to an air pollution incident.

## **Sustainable Development**

To respond to the various impacts that environmental change and pollution have had on the natural environment at local, urban, regional, national and global scales, a new mode of human existence has been suggested. This new mode seeks to provide for the needs of the current generation of humans without compromising the ability of future generations to meet their own needs and is known as sustainable development. As described in the 1987 publication *Our Common Future*, sustainable development is “a process of change in which policy and institutional adjustments, technological development, and the direction of investments are harmonized with the exploitation of resources”.

Sustainable development is based upon the following set of assumptions:

Environmental stresses are interconnected—deforestation not only destroys natural habitats, but threatens the global atmosphere and increases runoff and accelerates soil erosion and siltation of rivers and lakes;

Ecological and economic concerns are interdependent; therefore environment and economics must be integrated from the start;

Environmental and economic problems are linked to many social and political factors, and...

Ecological impacts do not respect political boundaries.

### **When Is, and When Isn't, Sustainable Development?**

Activities are sustainable when they:

- use materials in continuous cycles;
- use continuously reliable sources of energy, and...
- come mainly from the potential of human—communication, creativity, coordination, appreciation, and spiritual and intellectual development.

Activities are not sustainable when they:

- require continual input of non-renewable resources;
- use renewable resources faster than their rate of renewal;
- cause cumulative degradation of the environment;
- require resources in quantities that could never be available for people everywhere
- lead to the extinction of other life forms.

Sustainable development is difficult to fully conceptualize, understand and be put into everyday practice. It may help to think of sustainable development as a direction, like north, for example. You can point to it, there may be many ways to get there, you can see how far you've come, and you have some idea of how far you've got to go.

(<http://student.ccbc.cc.md.us>, 2001)

### *New Words*

dynamic	动力,动态,动力学的
atmosphere	大气圈,空气,气氛
lithosphere	岩石圈
hydrosphere	水圈
biosphere	生物圈
sociosphere	社会圈
kinship	亲属关系
hostility	敌意
artificial	人造的,人工的
cling	附着,黏紧
integrity	完整,完整性
Antarctica	南极洲
impact	影响,冲击,碰撞;对……发生影响
catalytic	接触反应的
converter	转炉
interdependent	相互依赖的,互助的
collective entity	集体
noxious	有害的
air conditions	大气环境
tender shoots	嫩芽
abatement	消除
sediment	残(沉)渣;沉淀(物)
sustainable	可持续的
harmonize	协调



deforestation            采伐森林

### ***Important Phrase***

environmental science	环境科学
environmental impact	环境影响
environmental problem	环境问题
environmental policies	环境政策
environmental education	环境教育
environmental technology	环境技术
environmental subsystem	环境子系统
air pollution	大气污染
catalytic converter	接触反应炉
smoke nuisance	烟害
sustainable development	可持续发展
<i>Our Common Future</i>	《我们共同的未来》
soil erosion	土壤侵蚀
non-renewable resources	不可更新资源
renewable resources	可更新资源

### ***Notes***

1. Environmental science is the discipline that is concerned with identifying and diagnosing environmental impacts.

环境科学是研究和评价环境影响的一门科学。

2. While environmental science is critical to understanding the impact of human activities on the natural environment, societies often turn to environmental policy, environmental education, and environ-