

English on Environmental Science and Engineering

# 环境科学与工程英语

田学达 主编

谭怀山 张小云 副主编

E

E

S

E



化学工业出版社

环境科学与工程出版中心

# 环境科学与工程英语

English on Environmental Science  
and Engineering

田学达 主编

谭怀山 张小云 副主编

化学工业出版社

环境科学与工程出版中心

·北 京·

(京)新登字 039 号

图书在版编目 (CIP) 数据

环境科学与工程英语/田学达主编. —北京: 化学工业出版社, 2002.3  
ISBN 7-5025-3249-8

I. 环… II. 田… III. ①环境科学-英语②环境工程-英语 IV. H31

中国版本图书馆 CIP 数据核字 (2002) 第 009374 号

---

环境科学与工程英语  
English on Environmental Science and Engineering

田学达 主编

谭怀山 张小云 副主编

责任编辑: 董琳

责任校对: 蒋宇

封面设计: 张竞文

\*

化学工业出版社 出版发行  
环境科学与工程出版中心

(北京市朝阳区惠新里 3 号 邮政编码 100029)

发行电话: (010) 64982530

<http://www.cip.com.cn>

\*

新华书店北京发行所经销

北京市彩桥印刷厂印刷

北京市彩桥印刷厂装订

开本 850×1168 毫米 1/32 印张 8 字数 211 千字

2002 年 4 月第 1 版 2002 年 4 月北京第 1 次印刷

ISBN 7 5025-3249-8/X·99

定 价: 18.00 元

---

版权所有 违者必究

该书如有缺页、倒页、脱页者, 本社发行部负责退换

## 前 言

当前,我国对环境保护工作日益重视,可持续发展的政策逐步深入人心,国家对环保的投资力度不断加大,带动了环保产业和相关产业的空前发展。许多有一定英语基础的从业人员,特别是一些高层管理者、涉外工作人员和环保爱好者,需要有一本内容系统、层次分明的环境科学与工程专业的英语读本。

笔者在多年的环境工程本科生、研究生教学和指导科研的过程中感到,为数不少的学生尽管已通过了大学英语四级甚至六级的考试,但对专业英语是比较陌生的,这是因为学生们阅读专业英语文献太少,能够多层次多角度研读英语文献的学生更是凤毛麟角。因此,笔者编写这本书,提供给学生们一套较全面的环境科学与工程专业英语阅读材料,一方面免去他们到处查阅文献之苦,另一方面,一册在手,学生们在用英文写作时尽可参考和模仿。在本书选材和写作过程中,既考虑到内容多样、词汇丰富、语言地道,又尽量不涉及过于繁杂与深奥的理论与工艺细节。熟读本书,对学生们的专业英语阅读和写作会有事半功倍之效。

全书共分五部分,23篇文章,29篇阅读材料。第一部分介绍环境科学与工程的基本内容、我国的环境保护政策与发展道路、国外特别是美国的环境保护政策和法律法规,第二部分列举人类面临的主要环境问题,包括大气污染、水污染、森林锐减与野生动物灭绝等内容,第三部分分析污染物的基本性质和对人类社会的负面影响,第四部分选择性地介绍一些污染物的处理工艺与技术,第五部分以英-汉对照形式列出环境科学与工程常用词汇3000余条。

笔者从良好和真诚的愿望出发,把环境科学与工程中的诸多重要问题归纳成这本书,但因水平有限,难免存在疏漏和错误之处,恳请专家学者和广大读者批评指正。

本书参考了国内外环境科学、环境工程等方面的期刊、著作和报纸，在此不一一列出，谨向原作者和出版社致谢。

在本书的编写过程中，中国科学院院士、中国工程院院士王淀佐教授，湘潭大学校长李树丞教授、副校长罗和安教授，湘潭大学外国语学院刘飞兵教授、环境工程系童志权教授、杨润昌教授、何运昭教授等领导和专家学者给予了大力支持和帮助，在此深表感谢。

**田学达**

**2002.1**

## PREFACE

At present, our country increasingly attaches importance to the environmental protection with the policy of sustainable development gradually striking root in the hearts of the people. The country's increasing investment on the environmental protection promotes the unprecedented development of the environmental industry and the correlative industries. Many technicians with some English knowledge, especially some senior administrators, persons concerning foreign affairs and the environmental protection fans, are anxious for a rather systemic English book, clear in arrangement of ideas, concerning the environmental science and engineering. This book perhaps can meet their needs.

In the teaching and research-guiding of the undergraduates and postgraduates, I feel that quite a lot of students are unfamiliar with the English about the major they are engaged in, although they have passed the College English Band 4 or even Band 6 Test. All these result is from their inadequate reading of English documents. So very few can read and study English documentary materials from various arrangements and angles. Therefore, I write this book to offer students rather general English reading material about environmental science and engineering in order to avoid their trouble of consulting some documentary materials, and to confer or imitate when writing. So I take into consideration all the respects of the various contents, the rich vocabulary, and the idiomatic English, trying to avoid choosing the complicated and profound theories and technical details. The mastery of this book will get twice the result with half the effort when students read and write English for special purpose.

This book consists of five parts (23 passages and 29 reading materials). The first part introduces the essential content of the environmental science and engineering; the environmental protection policies and development in China; the environmental protection policies and laws in other countries, especially in the United States. The second part enumerates some principal environmental problems the human beings are facing, including air pollution, water pollution, sharp fall of forests and extinction of wildlife. The third part of this book analyzes the basic characteristics of the contamination and its negative effect on human beings. The fourth part selectively introduces some techniques and technology of the disposal of contamination. The last part lists about 3000 English-Chinese vocabulary about the environmental science and engineering.

I sum up many important aspects concerning the environmental science and engineering, and write this book, taking good and sincere wishes as a starting point in consideration. With many limitations of my personal knowledge, there must be careless omissions and mistakes in this book. Criticisms from readers and scholars and experts are welcomed.

The book refers to the domestic and foreign periodicals, works and newspapers concerning the environmental science and engineering. Here I sincerely thank all those authors and presses.

I gratefully acknowledge help from Prof. Wang Dianzuo, academician of the Chinese Academy of Sciences and the Chinese Academy of Engineering, Prof. Li Shucheng, President of Xiangtan University, Prof. Luo He'an, Vice President of Xiangtan University, Prof. Liu Feibing from Foreign Languages College of Xiangtan University, Prof. Tong Zhiquan, Prof. Yang Runchang, and Prof. He Yunzhao from Environmental Engineering Dept, and other authorities and experts.

**Tian Xueda**

**2002.1**

# 化工出版社·环境科学与工程出版中心（部分图书目录）

书 名	定价 (元)	书 名	定 价 (元)
三废处理工程技术手册·废水卷	98.00	水处理工程师手册	98 00
三废处理工程技术手册·固体废物卷	90 00	实用水处理设备手册	40 00
三废处理工程技术手册·废气卷	85.00	实用废水处理技术	17 00
水处理剂应用手册	45 00	水处理剂和工业循环冷却水系统分析方法	58 00
工业废水中专项污染物处理手册	50 00	精细化工废水治理技术	28 00
水处理工程典型设计实例	48 00	水处理化学品手册	85 00
水处理新技术及工程设计	32 00	国内外废水处理工程设计实例	30 00
敞开式循环冷却水系统的化学处理	20 00	国内外给水工程设计实例	30 00
水化学	28.00	工业水处理技术问答及常用数据	48.00
农药废水处理(实用水处理技术丛书)	25.00	有机化工废水治理技术	40 00
味精造纸工业废水处理(同上)	25 00	染料、染色工业废水处理	25 00
膜法水处理技术(同上)	28 00	废水处理工程	33.00
制革工业废水处理(同上)	18 00	工业水处理技术	50 00
城市中小型污水处理厂的建设与管理(同上)	38 00	环境水质监测质量保证手册(第二版)	55 00
重金属废水处理(同上)	22 00	新编危险物品安全手册	185 00
化工废水处理技术(同上)	28 00	危险化学品安全技术全书	230 00
发酵工业废水处理(同上)	36 00	粉煤灰利用技术(资源化技术丛书)	18 00
医院污水污物处理(同上)	26 00	胶原蛋白(资源化技术丛书)	14 00
绿色化学工艺(环境工程实用技术丛书)	19 00	木质素(资源化技术丛书)	20 00
二氧化硫脱除与回收(同上)	26 00	壳聚糖(资源化技术丛书)	18 00
工业废水处理与回收利用(同上)	20 00	工业脱硫技术	30 00
废水处理单元过程(同上)	20.00	工业废气净化与利用	76.00
造纸工业水污染控制与治理技术(同上)	30 00	燃煤二氧化硫污染控制技术手册	60 00
煤加气压气化废水处理(同上)	19 00	环境与工业气体净化技术	75 00
食品工业废水处理(同上)	25 00	硫氮污染防治工程技术及其应用	20.00
农药污染与防治(同上)	18 00	生活垃圾卫生填埋现场运行指南	30 00
混凝·絮凝剂·絮凝设备(同上)	15 00	环境污染物分析监测	56 00
清洁生产导论(同上)	24 00	污染控制微生物工程	36 00
人口、资源与环境(环境教育丛书)	18 00	废催化劑回收利用	28 00
环境污染与控制(环境教育丛书)	18 00	环保设备——原理·设计·应用	66 00
绿色生活与未来(环境教育丛书)	19 00	禁用染料和环保型染料	24 00
英汉环境科学与工程词汇	48.00	农药残留量实用检测 methods 手册(二卷)	58 00
中国环境保护法规全书(1997-2001)	120 0	环境工程技术经济和造价管理	36 00

(欢迎索取我社图书目录,也可登录我社网站 [www.cip.com.cn](http://www.cip.com.cn) 查询更多书目)

以上图书全国各大书店均有销售,也可直接从我社邮购。

◆ 您从邮局或银行汇款均可,包装邮寄费按 10%计。

◆ 收款单位:北京市朝阳区惠新里 3 号 化学工业出版社发行部邮购科 邮编:100029

开户银行:工商行北京和平里分理处 账 号:891269-66

◆ 邮购电话/传真:010-64918013, 64982511 E-mail: [yougou@cip.com.cn](mailto:yougou@cip.com.cn)



## 内 容 提 要

本书共分五部分，23 篇文章，29 篇阅读材料。第一部分介绍环境科学与工程的基本内容、我国的环境保护政策与发展道路、国外特别是美国的环境保护政策和法律法规；第二部分列举人类面临的主要环境问题，包括大气污染、水污染、森林锐减与野生动物灭绝等内容；第三部分分析污染物的基本性质和对人类社会的负面影响；第四部分选择性地介绍一些污染物的处理工艺与技术，第五部分以英汉对照形式列出环境科学与工程常用词汇 3000 余条。

本书词汇丰富、语言地道，是一本内容系统、层次分明的环境科学与工程专业的英语读本，可供环境科学与工程研究、技术人员，环境管理人员以及相关专业的院校师生学习参考。

# CONTENTS

## PART I ENVIRONMENTAL SCIENCE AND POLICY

Passage 1	The Development of Environmental Policy in China	1
Reading Material 1	Environmental Policy and Regulation in the United States	14
Passage 2	The Field of Environmental Science	24
Reading Material 2	The Interrelated Nature of Environmental Problem	26

## PART II ENVIRONMENTAL PROBLEMS WE ARE FACING

Passage 3	Pollution Is a Dirty Word	33
Reading Material 3	Humans Have Been a Disaster	37
Passage 4	Natural Disaster and Global Ecological Environment	40
Reading Material 4	Hurricane, Landslide and Subsidence	44
Passage 5	Water Pollution	47
Reading Material 5	Drought	50
Passage 6	Ocean-the Regulator of Heat on the Earth	52
Reading Material 6	The Immigrant of a Country and a Disappearing Sea	56
Passage 7	Air Pollution	59
Reading Material 7	Three Problems of Air Pollution	61
Passage 8	Deforestation	65
Reading Material 8	The Greatest Extinction	69
Passage 9	Endangered Species: Birds	72
Reading Material 9	Vanishing Breed	76
Passage 10	Population Growth and Tragedy	77
Reading Material 10	Population Problem in Some Countries	80

Passage 11	Noise Pollution	85
Reading Material 11	Air Affects State of Mind	86

## **PART III THE NATURE AND EFFECT OF POLLUTION**

Passage 12	The Nature of Air Pollution	88
Reading Material 12	Indoor Air Pollutants	91
Passage 13	Effect of Air Pollution on Human Health	94
Reading Material 13	Visibility and Odor	100
Passage 14	Effect of Air Pollution on Animal, Plant and Material	102
Reading Material 14	Effect of Air Pollution on Climate	104
Passage 15	The Nature of Water Pollution	107
Reading Material 15	Transfer and Size of Water Pollutants	110
Passage 16	Biological and Chemical Oxygen Demand	113
Reading Material 16	The pH of Water	115
Passage 17	The Nature of Solid Waste	119
Reading Material 17	Hazardous Solid Wastes	121
Passage 18	Radiation Exposure and Thermal Pollution	123
Reading Material 18	Atomic Structure	126
Passage 19	The Nature of Pesticides	128
Reading Material 19	Effect of Pesticides Pollution	131

## **PART IV POLLUTION CONTROL ENGINEERING**

Passage 20	Methods of Treating Air Pollutant	133
Reading Material 20	Wet Scrubbers	143
Reading Material 21	A Study on Desulfurization Technique	148
Passage 21	Treatment Methods of Wastewater	154
Reading Material 22	Treatment of Paper Black Liquor	158
Reading Material 23	MBR System for Treatment of Only Wastewater	161
Reading Material 24	Techniques for Removal of Hexavalent Chromium	165
Passage 22	Methods of Treating Industrial Solids	171
Reading Material 25	Solid Wastes of Organic Chemical Industry	176

Reading Material 26	Radioactive Waste Disposal .....	180
Reading Material 27	Recovery of Wolframite From Slime by Flotation .....	183
Passage 23	Disposal and Recycling of Municipal Solid Waste ....	189
Reading Material 28	Recycling in Switzerland .....	195
Reading Material 29	Iron-Based Battery .....	198

**PART V AN ENGLISH-CHINESE VOCABULARY FOR  
ENVIRONMENTAL SCIENCE AND ENGINEERING**

# PART I ENVIRONMENTAL SCIENCE AND POLICY

## Passage 1 The Development of Environmental Policy in China

### 1. The review of the development in environmental protection in China

It has been more than 27 years since China carried out the environmental protection in 1973. Reviewing the course of the environmental protection we experienced, we will have a clearer understanding of the environmental protection with Chinese characteristics.

The course of the environmental protection in China can be described according to the time sequence of the three environmental protection conferences of the country. The first period of the China's environmental protection is from the First National Environmental Protection Conference in 1973 to 1983. The main achievement of the first conference lies in the primary acknowledgment of the existence of serious environmental problems in China for the first time. The conference put forward the policy of "programming entirely, overall arranging reasonably, utilizing, comprehensively, changing wastes into use, depending on the masses, protecting the environment all together and bringing benefit to the people"<sup>(1)</sup>. It embodies the idea of the primacy of prevention, the full use of sources and the participation of the people<sup>(2)</sup>. The policy is still of positive significance today. After the conference, the State Council set up temporary environmental protection agencies and the affairs agencies thus we moved the first step in

the environmental protection.

During this period before the Third Plenary Session of the 11th Central Committee of the Chinese Communist Party, the China's economy was in the state of near collapse. It was very difficult to carry out the environmental protection at this critical time. In spite of this, Zhou Enlai and some other old revolutionists showed great concern for the environmental protection and the people urged for the protection. We made achievements in the treatment of industrial pollution, the comprehensive utilization of the "three wastes" and the elimination of smoke and dust in cities. In this hard period, an environmental management force was brought up. In practice, they were gradually aware that it would not do to simply imitate the western ways and that the only way out was to act according to the practical circumstances and policies in China<sup>(3)</sup>.

The period from 1983 to 1989 was the climacteric of the environmental protection in China. We were fully aware that China could not follow the practice of "pollution first and then control" as some of the developed countries had done, because that would sacrifice a lot both economically and socially, leaving the following generations the immeasurable "environmental deficit." Nor could China choose the model of controlling the environmental problems with "high investment, high technology," for China is a developing country and if we were to copy the model of the developed countries, it means we would slow down the economic development and the environment would lose the permanent economic support. Therefore, at the Second National Environmental Protection Conference in 1983, the Party and the Government definitely announced that the environmental protection is one of our basic national policies and put forward the strategic guideline of "planning, actualizing and developing synchronously the economic construction, the urban and rural construction and the environmental

construction" to achieve the unity of the economic benefit, the social benefit and the environmental benefit<sup>(4)</sup>. It is the first time in China to have established the environmental protection policy, which showed the correct way to deal with the relationship between the development and environment. At the same time, it was put forward at the conference that reinforcing the environmental management is the core for the environmental protection, greatly changing the ideas and ways of the environmental protection, which was the result of the recognition of our country and the reflection and summarization of the 10-year practice.

Ever since then, our country has started a series of environmental protection centering on reinforcing the environmental management, gradually establishing the law system for the environmental protection, trying to set up and complete the environmental management agencies at all levels, putting into effect all the environmental management measures, educating the citizens with the environmental awareness, strengthening the study of the environmental science and technology etc. It is the second fastest economic development period since New China was founded with about 10% increase of the national annual GP. The national environment remained steady due to the reinforcement of the environmental management. There is evidence that the policy centering on the reinforcement of the environmental management is reasonable and that we came to the mature understanding and managing of our country<sup>(5)</sup>.

The period from 1989 till now is the one during which our environmental protection took great strides along the road with Chinese characteristics. The Third National Environmental Protection Conference concretized the policy put forward at the Second National Environmental Protection Conference. It was put forward at the third conference that we should carry out entirely the eight systems of the envi-

ronmental protection. The systems formed a complete system by composing the management target, the different control aspects and the different operation models, putting the principal environmental protection problems into it in order to establish the effective environmental protection system. That is the result of accumulating the experience of the environmental management, studying the foreign advanced management and also the result of the opening policy of the environmental protection.

## **2. The environmental protection road with Chinese characteristics**

The achievement in our environmental protection with Chinese characteristics, which gained the praise from the nation and the society and also from the international society, is as follows.

(1) The environmental protection is confirmed to be the task of our modernizations and one of the basic national policies thus the environmental protection status has been ensured. We established the policy of “planning, actualizing and developing synchronously the economic construction, the urban and rural construction and the environmental construction” to achieve the unity of the economic benefit, the social benefit and the environmental benefit. We definitely take the strides along the corresponding development of economy and environment, giving up the practice of “pollution first and then control”<sup>(6)</sup>. The environmental protection should be taken into consideration when we make the plan for the economic development and it has been brought into the national economic and social plan since the 6th 5-year plan.

(2) The three environmental policies were established, that is the prevention goes first; the one that pollutes should take the responsibility for the treatment; we should reinforce the environmental management. These policies combine with the administrative management and financial measures, the governmental supervision and education,



the law force and technical guidance so as to form the environmental protection system with Chinese characteristics<sup>(7)</sup>.

(3) The responsibilities of the country, the provinces and the corresponding sections are confirmed, arousing the enthusiasm of the management of all levels. The environmental management agencies of all levels from the government to provinces, districts and counties have been set up and the favorable management force has also been formed. Meanwhile, the environmental agencies have been established in the departments of industry, transportation, agriculture, forestry and water conservancy to form the environmental protection management system of the united management and the division and cooperation. This management system has effectively reinforced the management, controlled the pollution, and improved the environment.

(4) We have extended the advanced technology according to the situation of our country, trying to control the pollution in the process of producing based on the science, technology and the low-pollution techniques. We have also made emphasis on turning science into productive force in order to prevent pollution and protect the environment, promoting the commercialization and the application of the science and technology.

The environmental protection industry has been gradually constructed so as to lay a solid foundation of flourishing the China's environmental protection industry and strengthening the ability to prevent the pollution.

(5) Continuously promoting the citizens' environmental awareness is regarded as a basic task. Apart from the environmental protection specialty in universities and the basic environmental education in elementary and high schools, the network for propagandizing the environmental protection has been formed, enhancing the national environmental protection consciousness.