

S. Chand's ENVIRONMENTAL EDUCATION

WITH SPECIAL SECTION ON PROJECTS,
ACTIVITIES IN ENVIRONMENTAL EDUCATION
AND SAMPLE WRITTEN PROJECTS

CLASS XI



M.P. MISHRA



TWO COLOUR EDITION

S. Chand's
**ENVIRONMENTAL
EDUCATION**

WITH SPECIAL SECTION ON PROJECTS & ACTIVITIES IN
ENVIRONMENTAL EDUCATION & SAMPLE WRITTEN PROJECTS

CLASS XI

AS PER NEW CBSE / NCERT & ISC SYLLABUS

(An Important Book for various courses of Vocational, Professional
and Competitive Examinations also)

Dr. M.P. MISHRA

M.Sc., PhD., B.Ed., B.J.

Chief Editor (Hon.) ECOSOC (Environmental Newsletter)

President, People For Animals-Ranchi (Jharkhand)

Advisor, Prithvi Foundation - Jharkhand

Consultant, Ministry of Environment & Forests (AWD), Govt. of India

Vice President, All India Science Writers Association

Secretary, Science for Society, Jharkhand



S. CHAND & COMPANY LTD.

(AN ISO 9001 : 2000 COMPANY)

RAM NAGAR, NEW DELHI - 110 055



S. CHAND & COMPANY LTD.

(An ISO 9001 : 2000 Company)

Head Office : 7361, RAM NAGAR, NEW DELHI - 110 055

Phones : 23672080-81-82, 9899107446, 9911310888;

Fax : 91-11-23677446

Shop at: schandgroup.com; E-mail: schand@vsnl.com

Branches :

- 1st Floor, Heritage, Near Gujarat Vidhyapeeth, Ashram Road, **Ahmedabad**-380 014. Ph. 27541965, 27542369, ahmedabad@schandgroup.com
- No. 6, Ahuja Chambers, 1st Cross, Kumara Krupa Road, **Bangalore**-560 001. Ph : 22268048, 22354008, bangalore@schandgroup.com
- 238-A M.P. Nagar, Zone 1, **Bhopal** - 462 011. Ph : 4274723. bhopal@schandgroup.com
- 152, Anna Salai, **Chennai**-600 002. Ph : 28460026, chennai@schandgroup.com
- S.C.O. 2419-20, First Floor, Sector- 22-C (Near Aroma Hotel), **Chandigarh**-160022, Ph-2725443, 2725446, chandigarh@schandgroup.com
- 1st Floor, Bhartia Tower, Badambadi, **Cuttack**-753 009, Ph-2332580; 2332581, cuttack@schandgroup.com
- 1st Floor, 52-A, Rajpur Road, **Dehradun**-248 001. Ph : 2740889, 2740861, dehradun@schandgroup.com
- Pan Bazar, **Guwahati**-781 001. Ph : 2738811, guwahati@schandgroup.com
- Sultan Bazar, **Hyderabad**-500 195. Ph : 24651135, 24744815, hyderabad@schandgroup.com
- Mai Hiran Gate, **Jalandhar** - 144008 . Ph. 2401630, 5000630, jalandhar@schandgroup.com
- A-14 Janta Store Shopping Complex, University Marg, Bapu Nagar, **Jaipur** - 302 015, **Phone : 2719126**, jaipur@schandgroup.com
- 613-7, M.G. Road, Ernakulam, **Kochi**-682 035. Ph : 2378207, cochin@schandgroup.com
- 285/J, Bipin Bihari Ganguli Street, **Kolkata**-700 012. Ph : 22367459, 22373914, kolkata@schandgroup.com
- Mahabeer Market, 25 Gwynne Road, Aminabad, **Lucknow**-226 018. Ph : 2626801, 2284815, lucknow@schandgroup.com
- Blackie House, 103/5, Walchand Hirachand Marg, Opp. G.P.O., **Mumbai**-400 001. Ph : 22690881, 22610885, mumbai@schandgroup.com
- Karnal Bag, Model Mill Chowk, Umrer Road, **Nagpur**-440 032 Ph : 2723901, 2777666 nagpur@schandgroup.com
- 104, Citicentre Ashok, Govind Mitra Road, **Patna**-800 004. Ph : 2300489, 2302100, patna@schandgroup.com
- 291/1, Ganesh Gayatri Complex, 1st Floor, Somwarpeth, Near Jain Mandir, **Pune**-411011. Ph : 64017298, pune@schandgroup.com
- Flat No. 104, Sri Draupadi Smriti Apartment, East of Jaipal Singh Stadium, Neel Ratan Street, Upper Bazar, **Ranchi**-834001. Ph: 2208761, ranchi@schandgroup.com
- Kailash Residency, Plot No. 4B, Bottle House Road, Shankar Nagar, **Raipur**. Ph. 09981200834 raipur@schandgroup.com

© 2008, M.P. Mishra

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the Publishers.

First Edition 2008

ISBN : 81-219-2857-5

Code : 05 132

PRINTED IN INDIA

By Rajendra Ravindra Printers (Pvt.) Ltd., 7361, Ram Nagar, New Delhi-110 055
and published by S. Chand & Company Ltd., 7361, Ram Nagar, New Delhi-110 055.

PREFACE

For the first time in his entire cultural history, man has confronted with the most horrible, tragic and unprecedented problems in the global environment. Not very far back, in the past, this very environment was pure, virgin and uncontaminated, and basically quite hospitable for all living things including human beings. Then why do we hear and experience the numerous problems in the environment on local, regional and global levels, now? Well, this is all due to the thoughtless overexploitation of our various natural resources, by our own activities, perhaps due to our un-ending greed, in the garb of 'development', and the egoistic attitude of man towards nature. The other main reasons are: population explosion, rapid urbanization, and the throw-away concept of wastes and other disposable items. Fortunately, there has been a growing awareness of the impending danger, and planned positive efforts are being made, right from the grass root upwards, the world over. Now, the issues of environment are gaining sufficient momentum throughout the world. Through the last few decades, the nature itself has taught people of the world, the lesson that 'conservation is not just an option for some responsible persons but a way of life for all the citizens of the world'. As the sense of conservation sprouted, various social organizations and governments started educating the people about its different aspects and resources. Currently, some of the major issues being seriously talked about are : different types of pollutions causing problems on local, national and global levels; problems of wastes; deforestation and its consequences; poaching of wild animals; extinction of species; loss of biodiversity; profligate use of common property resources ;erosion of traditional indigenous knowledge, ethos and values etc..

Our girls and boys of the new generation are the future custodians of the earth, its environment and resources. Hence, it is very important to sensitize them to the environment and associated problems, and at the same time to equip them with all the necessary knowledge and skills in a holistic manner, so as to enable them solve the environmental problems through positive and sustainable ways. For this, it is further required that positive attitudes, social values and serious concern towards sustainable development are stimulated in them. The Environmental Matters so far taught at plus two levels in Indian Schools and colleges, remained infused along with the original text of different subjects. Sometimes back, our educationists and environmentalists across the world assembled together to talk on the emerging problems of the global as well as local and regional levels and discussed about education as an effective instrument for the protection of environment on various levels. In fact, no tool, for any conservation programme, either by governments or by other agencies, can ever be as effective as Education. But the education of environment can no longer be effective by adopting the infusion model. The infusion of environmental aspects in syllabi of different subjects was

welcomed by responsible people in the initial stage but later it was found that the experiment could not produce the desired results. Some educationists are of the opinion that the original components of environmental knowledge and mechanism infused in fragments in different subjects, burdened the spirits of those subjects (like literature), secured for themselves the images of “weeds in the crop fields” and hence, remained neglected by testing and evaluation. On the other hand, various surveys conducted earlier, reveal that students retain 10% of what they read, 50% of what they see and 90% of what they do. The “doing” component missed somewhere in our earlier integrated or infusion model. The conditions of environment we experience today, are matters of serious concern and hence, can not be taken up lightly. In this spirit, the study of Environmental Education has been made compulsory from classes I to XII and onwards; including various vocational, professional and technical courses; from the Academic Session 2005–2006.

This book has been prepared according to the syllabi of Environmental Education for Plus Two Levels, incorporating all the significant elements of the content, process, teaching- learning strategies & expected learning outcomes. It is hoped that this book will provide direct and systematic knowledge of Environmental Concepts, Theories, Considerations, Issues, and Actions through classroom and outdoor learning. It is further hoped that this book will stimulate among students, a true love for nature by encouraging them to undertake Project Formulation, Surveys, Observations, Interviews, Field Trips, Collection, Compilation and Documentation of Mini Research Activities. With the expression of intrinsic abilities for fact finding through classroom and outdoor learning, students can bring about improvements in their local environment.

A special section on How to do an Environmental Activity and an Environmental Project, and How to write an Activity Report and an Environmental Project- Report, has been given in this book to facilitate students to follow proper trends and styles of experimentation and documentation in Environmental Science.

M. P. MISHRA

Phones: 0651 2550039 (R), 09431357604(M)
E-mail:mpmishra.azh@gmail.com

ACKNOWLEDGEMENTS

I am indebted to my parents who have brought me to this world and from whom I have inherited my merits and abilities. I am heartily thankful to Shri Ram Sagar Pathak, my father-in-law, for his blessings, guidance, and continuous encouragements. I am indebted to Shri Ramashray Mishra; Prof. R.K. Pandey, University Professor and Head, Post Graduate Department of Botany, Ranchi University; and Prof. P. K. Pandey, University Professor and Head, Department of Botany, Ranchi College, Ranchi University for their inspirations and encouragements in various ways. My thanks are due to Shri R. S. Mishra and Shri Ashutosh Mishra for their keen interests in my academic activities. I am thankful to Smt. Kumud Lata Mishra, Latika Mishra, Alka Pandey, Rolie Mishra and Prabhanshu Mishra for their emotional, academic and technical supports during the preparation of the manuscript of this book.

I am thankful to my friends Shri Rakesh Ranjan Singh (Officer-Ministry of Information and Broadcasting); Shri Chandan Mishra (Journalist, Hindustan), Shri Mithilesh Kumar Mishra and Shri Alok Kumar Mishra (Journalist, Rashtriya Sahara), Shri Manoranjan Singh and Shri Rana Pratap Singh (Journalists, and founder Trustees-People for Animals, Jharkhand) for their helps in various ways. I am thankful to my elders Shri S.N. Pandey and Smt Girija Pandey; Shri O.P. Pandey and Smt. Girish Kumari Pandey; Shri R.A. Pandey (Director and Scientist, Forensic Science Laboratory, Lucknow, U.P., India) for their blessings. I am heartily thankful to Shri Mithilesh Kumar Mishra (Vice President, Sterling Agro- Processing Pvt. Ltd. and C.E.O., Planet Pickles, Bangalore, India); Shri A.K.Pathak and Smt. Sunita Pathak (Nairobi, Africa); Dr. Alok Kumar Pandey (Research Fellow, Environmental Science, U S A) and his wife Smt. Poonam Pandey; Shri Avinash Kumar Pandey; Shri Ganesh Pratap Pathak and Smt. Jaya Pathak; - and Shri Ambarish Pandey of Society for Educational Empowerment and Development (SEED) - Azamgarh, U.P., India, for their contributions to the cause of Environment and Social Development and for their supports in various ways.

I am specially thankful to Smt. Nirmala Gupta (CMD), Shri Navin Joshi (Vice-President, Publishing), Shri R. S. Saxena (Advisor), S. Chand & Company Ltd. New Delhi (India), its Editors and all the associates, for undertaking this publication and bringing it out in a record time and in such a beautiful and trendsetter style.

All the constructive suggestions to improve the quality and standard of this book will thankfully be acknowledged. Concerned teachers and students are requested to send their suggestions for further upgradation and improvements in the contents of this book.

M.P. MISHRA

Phones: 0651 2550039 (R), 09431357604 (M)
E-mail:mpmishra.azh@gmail.com

ENVIRONMENTAL EDUCATION CLASS XI

SYLLABUS

I. MAN AND ENVIRONMENT

- Dimensions of Environment – physical, biological and social
- Human being as a rational and social partner in environmental action
- Society and Environment in India: Indian Traditions, customs and culture – past and present
- Population and Environment
- Impact of Human Activities on Environment
 - environmental problems of urban and rural areas
 - natural resources and their depletion
 - stress on civic amenities: supply of water and electricity, waste disposal, transport, health services
 - vehicular emissions
 - urbanization – land use, housing, migrating and floating population

II. ENVIRONMENT AND DEVELOPMENT

- Economic and social needs
- Agriculture and industry as major sectors of development – poverty, affluence, education, employment, child marriage and child labour; human health – HIV /AIDS, social, cultural and ethical values
- Impact of development on environment – changing patterns of land use, land reclamation, deforestation, resource depletion, pollution and environmental degradation
- Impact of liberalization and Globalization on – agriculture and industries, dislocation of man power and unemployment, implications for social harmony
- Role of society in development and environment – public awareness through education, eco-clubs, population awareness through education, eco-clubs, population education programme, campaigns, public participation in decision making

III. ENVIRONMENT POLLUTION AND GLOBAL ISSUES

- Air, water(fresh and marine), soil pollution – sources and consequences
- Noise and radiation pollution – sources and consequences.
- Solid, liquid and gaseous pollutants
- Handling of hazardous materials and processes: Handling and management of hazardous wastes
- Ozone layer depletion and its effects
- Green House Effects; Global Warming and Climate Changes, and their effects on human society, agriculture, plants and animals
- Pollution related diseases
- Disasters – natural (earthquakes, droughts, floods, cyclones, landslides) and man-made (technological and industrial); their impact on environment; prevention, control and mitigation
- Strategies for reducing pollution and improving the environment

IV. ENERGY

- Changing Global Patterns of Energy Consumption – From Ancient To Modern Times
- Energy Consumption As a Measure of Quality of Life
- Rising demand for energy, gap between demand and supply(Indian context)

- Conventional energy sources – fossil fuels and firewood, potential(Indian context) and limitations of each source, methods of harnessing and environmental consequences, need to promote non-conventional energy sources
- Conservation of energy sources – types of non- conventional sources(biomass, solar , wind, ocean, hydel , geothermal, nuclear), potential(Indian context) and limitations of each source, methods of harnessing and their environmental consequences, need to promote non-conventional energy sources
- Conservation of energy sources – efficiency in production, transportation and utilization of energy
- Planning and management of energy; future sources of energy- hydrogen, alcohol, fuel cells
- Enhancing efficiency of the devices and optimizing energy utilisation

EXEMPLAR PROJECTS AND ACTIVITIES

It is expected that students will undertake at least two projects or activities each year, one of which should be undertaken individually, and they will prepare a report in each case. Teachers may plan and design projects and activities depending upon the local situations, available resources and environmental issues of concern. The projects and activities given below are only suggestive and not prescriptive.

- To study the changes that have taken place in the given land area of a city / village / locality / market during the last five years in respect of at least five parameters like number of houses, residents and families, food habits, number of household goods in the family, consumption of water, electricity and fuels including that for personal vehicles, sources of noise (public address system being used, television, radio and vehicles on the road), common facilities like number of schools, hospitals, shops, theatres, public convenience,, public utilities, public transport; number of factories, industries and / or the facilities for production and processing of goods, loss of water bodies, types and quantity of wastes, their disposal and treatment facilities with a view to discussing the pattern of changes and impact on environment and quality of life. One specific project on these aspects may be to study the changes that have taken place in a given area during the last five years in respect of the number of houses, residents and families and to prepare a report on their effects on civic amenities like availability of water, electricity and fuels; the drainage system, disposal of wastes including night soil.
- To study the environmental profile of a town/ locality / village in respect of population density, green cover, educational level of residents, social problems and sources of pollution and their effect on air, water and soil.
- To improvise two models of green houses of similar dimensions made for low cost / no cost materials, to place them in the open under identical conditions and put some potted plants in one of them to note the temperature inside and outside of both the green houses every two hours from dawn to dusk for two weeks. To explain the reasons for the differences in temperature, if any, between the two green houses.
- To collect data on monthly consumption of electricity and fuels from at least five families, any two commercial establishments and four public utilities in a given locality. To plan strategies for educating consumers to economize on the consumption of electricity and fuel by reducing their overuse, mis-use, and improper use.
- To study, for a period of one month, the status of sanitary conditions and methods of waste disposal of a given locality vis –a-vis the role of Panchayat, Municipality or corporation and to prepare an action plan for making the conditions more environment-friendly.
- To investigate the impact of an industry or a large manufacturing unit on the local environment. The parameters could be land use, the ratio of the covered area and the open space, the raw materials used for production, inputs like electricity and water, the types of

waste generated and the modes of waste disposal, use of environment friendly and efficient technology, types of pollutants emitted or discharged, the average health status of employees and residents in the area.

- To study the impacts of changes in agricultural practices or animal husbandry including poultry, piggery, fishery and apiculture over a period of time on the local environment of a given locality or village. The components for analysis may include: types of crops, land area under cultivation, mechanization, use of electricity, mode of irrigation and agrochemicals, agro wastes, and their disposal, types of animal breed and their feed, types of shelter and their health care, methods of preservation and processing of products and animal wastes and their disposal. To suggest an action plan for modifying the prevailing practices so as to make them environment friendly and sustainable.
- To collect samples of water from different sources and study their physical characteristics like turbidity, colour, odors, the measure of pH, the nature of suspended and dissolved impurities and pollutants, the presence of toxic materials like mercury, lead, arsenic, fluorine and the presence of living organisms. For testing the presence of toxic materials and living organisms, the help of a local laboratory or institution may be taken, if available. To identify the most polluted sample of water and locate the sources of its pollution. To devise an actions plan for mobilizing public opinion for checking the pollution.
- To study the practices followed in the region for storage, preservation, transportation and processing of perishable and non-perishable farm products and to assess the extent of their wastage due to faulty practices.
- To study the status of an endangered species listed for the region by collecting information through different sources and observations, if possible and to assess the reason for its diminishing number. Suggest ways and means to protect the species.
- To prepare a status report on the prevalence of child labour in a given area through simple surveys on children engaged as domestic help and as workers in farms, commercial establishments and manufacturing units. The survey may be in respect of age group, education, wages, working hours, working conditions, safety in work place, health, handling hazardous materials and the like. Units dealing with hazardous materials and processes may be identified and an action plan for mobilizing public opinion against the child labour may be prepared.
- To conduct a survey of plants and trees in the locality and collect information about their cultural, economic and medicinal values from the local people and the available literature. To prepare an action plan for the propagation of trees those are most valuable in terms of their cultural, economic and medicinal use.
- To prepare a flow chart to show different steps involved in the supply of tap water from the source (river, bore well) to houses in the locality. To collect information from the concerned authorities about the quantity of water processed and the amount of energy required for the purpose at each stage. To compute the energy spent for supplying 1 kilolitre of water to the consumer. To plan and execute a campaign to educate the community members about the implications of wastage of water in terms of energy.

To make a list of raw materials used by the family for preparing different types of dishes. To identify the plants and animals and their parts from which each food material is obtained. Also to make a list of plants on which the animals in the list depend for their food. To name the processes, if any, in which action of micro organisms is made use of. To identify those plants and animals those are found in the locality. To prepare a report supported by diagrams/ photographs/ pictures/ graphs to focus on the importance of biodiversity in providing food to human population.

CONTENTS

UNIT-I

MAN AND ENVIRONMENT	1 – 56
1. Environment and Human Society	... 3-20
2. Population and Environment	... 21-37
3. Impact of Human Activities on Environment	... 38-56

UNIT-II

ENVIRONMENT AND DEVELOPMENT	57 – 108
4. Environment and Development: Basic Considerations and Factors	... 59-78
5. Impact of Development on Environment: Liberalization and Globalization	... 79-92
6. Role of Society in Development and Environment	... 93-108

UNIT-III

ENVIRONMENTAL POLLUTION AND GLOBAL ISSUES	109 – 238
7. Environmental Pollution: Sources and Consequences	... 111 - 134
8. Hazardous Materials: Sources, Handling & Management	... 135 - 156
9. Global Issues of Environment	... 157 - 180
10. Pollution Related Diseases	... 181 - 198
11. Disasters	... 199 - 220
12. Strategies for Reducing Pollution and Improving the Environment	... 221 - 238

UNIT-IV

ENERGY	239 – 300
13. Energy: Consumption and Demands	... 241 - 254
14. Sources of Energy	... 255 - 282
15. Energy: Conservation, Planning and Management	... 283 - 300

PROJECTS

Special Section :	301 – 321
Projects and Activities in Environmental Education	



UNIT-I

Man and Environment

1. Environment and Human Society
2. Population and Environment
3. Impact of Human Activities on Environment

Environment and Human Society

FACTS & CONCEPTS

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> ● Introduction: What is environment? ● Environment and Environmental Science ● Dimensions of Environment <ul style="list-style-type: none"> ■ Physical Dimensions of Environment ■ Biological Dimensions of Environment ■ Social Dimensions of Environment | <ul style="list-style-type: none"> ● Roles of Human Beings In The Environment <ul style="list-style-type: none"> ■ Roles of Human Beings as a Rational Partner ■ Roles of Human Beings as a Social Partner ● Society And Environment In India <ul style="list-style-type: none"> ■ Indian Traditions, Customs and Cultures-Past and Present |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

1.1. INTRODUCTION

What is Environment?

Environment may be defined as ‘Complete range of various sets of external conditions comprising-physical, biological, and for human beings-cultural, economic and political conditions in which human beings and other life forms exist in continuous interactions among themselves’.

The term Environment has variously been defined by different scholars from time to time. According to S.C. Kendeigh (1974), ‘the sum total of physical (abiotic) and biotic conditions influencing the responses of the organism, is called as its Environment’.

1.2. ENVIRONMENT AND ENVIRONMENTAL SCIENCE

Environment in real life situations ranges from indoor to outdoor life of a man. In indoor life, the environment embraces everything pertaining to living conditions

ranging from the quality of the building materials; design and construction of the house; manners of keeping grains, fruits and vegetables etc.; types and qualities of water being consumed; eating habits, health and hygiene; uses of cosmetics and luxuries; washing materials and equipments; means of recreation and their uses; types of dresses and dress–designs, clothing materials; conditions of surrounding and drainage systems; waste disposal systems; types of vegetation growing naturally or grown around; types of locations of cattle sheds etc.

In outdoor life, the environment embraces places of activities/ services; industries–types and locations; types of farms and agricultural practices; urbanisation; town planning; building plans; provisions of roof top water harvesting; roads and railway tracks and types of human habitations near them (conditions of slums); positions and conditions of water bodies; dumping sites; conditions of vehicles moving along roads; management of transport and traffic control systems etc.

Going through above accounts, we observe that the environment is a vast area comprising various interlinked components. Hence, the study of environment comprises various interlinked disciplines of knowledge mainly pertaining to basic and applied sciences together with engineering, public administration, socio-economics, ethics and law. Total of the human resources alongwith the government machinery and social organisations are needed to be applied in the task of management of various environmental fractions. For this, involvement of high degree of awareness, knowledge, attitudes, skills together with the public participation, social, financial, political, moral and administrative support is required on the priority basis. All these areas are covered in the study of environmental science. **Environmental science is the field of study which deals in all the related perspectives in integrated, interdisciplinary and holistic manner.**

As environment is common heritage and property of all nations of the world, the science of environment should also combine relevant matter so as to promote the value and necessities of local, national and international co-operation in the prevention and solution of environmental problems across the globe.

1.3. DIMENSIONS OF ENVIRONMENT

Before 1960s, the term environment was used merely for the surrounding of an organism which comprised physical factors only (temperature, light etc.). After 1960s rapid industrialisation and industrial developments gave birth to enormous problems at local, regional, national and international levels that forced people to rethink about environment and to develop a new approach towards it. This new approach included all the life forms in interactive relations to all the physical forms, forces and factors surrounding them. Thus, the dimensions of environment were expanded to include living organisms of all types together with all the non-living components of the nature. The dimensions of environment in modern times can be viewed in three forms – the Physical Form, the Biological Form and the Social Form.

1.3.1. PHYSICAL DIMENSIONS OF ENVIRONMENT

The word physical relates to natural forces and things that are not alive. The physical dimensions of the environment cover physical environmental conditions including

temperature, sunlight, pressure, wind and air mass, geomagnetism, humidity, precipitation, topography(including water systems- rivers, lakes, ponds, ditches, seas and oceans except living organisms found in these systems and others).

The physical dimensions of environment cover a number of spheres like Atmosphere, Hydrosphere and Lithosphere.

I. ATMOSPHERE

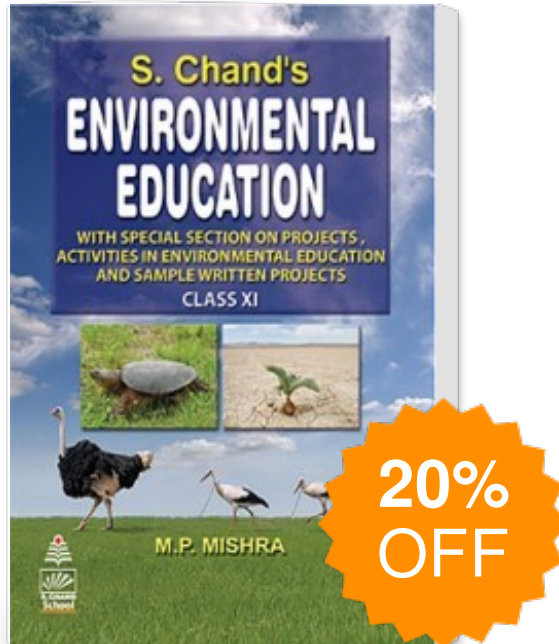
The Envelop of air held around the earth by its magnetic force called gravity or the geomagnetism, is called as atmosphere. What is air? The air is a mechanical mixture of different gases surrounding the earth. The specific composition of air and the radiations from the sun makes the atmosphere peculiar for the earth and its inhabitants. The average composition of clear dry air near sea level has been detailed in the table below-

Table : 1.1. Components of Air and their concentration

<i>Components of Air</i>	<i>Concentration</i>	
	<i>Average Concentration Volume</i>	<i>(PPM by volume) (Percent)</i>
1. Major Components		
Nitrogen (N ₂)	780900.00	7.809×10^1
Oxygen (O ₂)	209400.00	2.094×10^1
2. Minor Components		
Argon (Ar)	9300.00	9.30×10^{-1}
Carbon dioxide (CO ₂)	318.00	3.18×10^{-4}
3. Trace Components		
Neon (Ne)	18.00	1.82×10^{-3}
Helium (He)		
Methane (CH ₄)	5.20	5.25×10^{-4}
Krypton (Kr)	1.00	1.0×10^{-4}
Hydrogen (H ₂)	0.50	5.0×10^{-5}
Water Vapour (H ₂ O)	0.25	2.5×10^{-5}
Carbon monoxide (CO)	0.1	1.0×10^{-5}
Ozone (O ₃)	0.02	2.0×10^{-6}
Ammonia (NH ₃)	0.01	1.0×10^{-6}
Nitrogen dioxide (N ₂ O)	0.001	1.0×10^{-7}
Sulphur dioxide (SO ₂)	0.0002	2.0×10^{-8}

The **density of air** in the atmosphere decreases by increasing altitude and more than 90% of air by mass, is found within a range of about 30 Km from ground level. According to recent investigations certain electrically charged particles called ions, are found alongwith various gases, dust particles and water- vapour in the atmosphere.

S.Chand Enviroment Education for Class XI



Publisher : SChand Publications ISBN : 9788121928571

Author : Dr MP Mishra

Type the URL : <http://www.kopykitab.com/product/12020>



Get this eBook