

Eco-Degradation due to Air Pollution

Editors

Prof. Arun Arya

Prof. S.J. Bedi

Prof. V.S. Patel

Indian Association for Air Pollution Control
C/o Botany Department, Faculty of Science
The Maharaja Sayajirao University of Baroda
Vadodara 390 002



SCIENTIFIC PUBLISHERS (INDIA)

P.O. BOX 91

JODHPUR

Published by:
Tanay Sharma
Scientific Publishers (India)
5-A, New Pali Road, P.O. Box 91
Jodhpur - 342 001
E-mail: info@scientificpub.com
www.scientificpub.com

© Arya, Arun *et al.*, 2009

ISBN: 978-81-7233-598-4

Laser typeset: Rajesh Ojha
Printed in India

ॐ भद्रं करारोभिः शृणयाम देवा भद्रं पश्येमाक्षाभिर्यजत्राः ।
स्थिरैरङ्गैस्तु एटुवा सस्तनूभिवर्यशेमहि देवहितं यदायुः ॥

यजुः. 25-21

O Holy Gods! May we ever hear with our ears auspicious words. May we ever see with our eyes pleasing things. may we atain, simultaneously, good health and prosperous long life.

The task of the
enlightened is to
remove the poverty, the
inequality, the inlignity
and, the suffering which
weighs down countless
millions in this world. — *Dr. S. Radhakrishnan*

ॐ हिरण्यगर्भः समवर्तताग्रे भूतस्य जातः पतिरेक आसीत्
स दाधार पृथिवीं द्यामुतेमां, कस्मै देवाय हविषा विधेम ॥

— यजु. 13-4

वर्तमान जो प्रलय काल में प्राणिमात्र का स्वामी है,
सूर्य, चन्द्र तारे अन्तर में, सबका अन्तर्यामी है,
द्यौ, पृथ्वी और अन्तरिक्ष का आश्रय वह कहलाता है
कौन नियन्ता? अर्चन किसका? जो सुखरूप विधाता है ।

Eco-Degradation due to Air Pollution

Foreword

It is with great pleasure that I write a Foreword for the proceedings volume of the seminar on Ecodegradation due to Air Pollution at the instance of the Editor Prof. Arun Arya of the M.S. University of Baroda.

The Blue Planet Earth is at cross roads with respect to the present and future scenario of degrading life-supporting environment. Most of the global problems like green-house gases, global warming, ice melts, sea level rise, stratospheric ozone hole, rise in tropospheric U.V.-B and ozone levels etc. are linked with air pollution. From the contents of the book it is evident that the diversity of air pollution aspects are very broad and there is something interesting for every one interested in the future of the Blue-Planet, teachers and students alike. Ecotechnology, ecodegradation, eco-auditing, air pollution controls, green belts, town planning, historic building problems, biodeterioration of cultural heritage, fungal biopollutants in fruit markets, air pollution due to stone crushing and dolomite grinding units, indoor pollution, environment awareness and air pollution terminologies are included. In view of the above this volume must be an essential addition to College and University libraries and the book shelves of every ecologist.

Prof. R.S. Ambasht
B.H.U. Professor Emeritus
Department of Botany
Banars Hindu University,
Varanasi - 221 005, India

Preface

ओ...म् भूमे मार्टिन धेहि मा भद्रया सुप्रतिष्ठितम् ।
संविदाना दिवा कवे, श्रियां मा धेहि भूत्याम् ।।

Atharva Veda 12-1-63

O Mother like Earth! may you stabilize me with pious wealth. O omniscient Earth! you having your contacts with the heaven, make me wealthy and prosperous.

German author Max Muller has said, "If I were to like over the whole world to find out the country most richly endowed with all the wealth, power and beauty that nature can bestow-in-some parts of a very paradise on earth - I should point to India." Our earth and its ecosystems are every changing. It is said that next world war if any will be for water. A once abundant resource is increasingly being wasted, misused and polluted. India faces an impeding crisis most visible in many of its cities. Rivers are polluted due to industrial effluents and pesticide run off. It is advised to enforce strict regulation on ground water extraction and plan projects with a holistic understanding of water as an ecological concept rather than as a hydrological or engineering construct.

उपस्थास्ते अनमीवा अयक्ष्माः

Atharva Veda 12-1-62

We pray to the God that on this planet earth we may live healthy and happily without suffering from diseases. This is almost impossible when our soil is getting polluted with heavy metals and pesticides, air is toxic due to pollutants like particulate matter, VOCs, COx, NOx, SOx etc. Some of these primary pollutants undergo further changes to produce secondary pollutants like ozone, PANs, sulphuric and nitric acids. Our river water and ground water is getting more and more polluted. Most of Indian river water is not fit directly for human consumption.

Industrial disasters can create havoc. One of the worst industrial disaster occurred on December 2, 1984, when 60 tonnes of deadly Methyl isocyanate leaked out of the Union Carbide factory in Bhopal killing about

8,000 people. Ms. Sunita Narain points out about an advertisement in late 1990's which says "Roll down the window of your bullet-proof car, Mr. Prime Minister the security threat is not the gun it is the air of Delhi." Same is now true for other cities like Bangalore and Vadodara, each passing day, the capital city of Karnataka adds 1000 new vehicles. In Bangalore only 30 per cent of people travel by bus as against 60 per cent in Delhi. Kolkata is one of the most polluted cities of the world. During winter pollutants cannot disperse easily, mainly due to inversion, low wind speed and high congestion. The average benzene concentration in 1992 and 1993 were $1004 \mu\text{g}/\text{m}^3$ and $7082 \mu\text{g}/\text{m}^3$. More than 50% of the population of core Kolkata city live in slums. The pollutants like polynuclear aromatic hydrocarbon [PAH] and benzene soluble organic matter [BSOM] and CO are on higher side, poorly maintain cars, poor quality of fuel and bad condition of city streets are responsible for environmental pollution. During 1985, WHO in its monitoring programme on air claimed that SPM value of Kolkata is the highest in the world. To make the Beijing more cleaner for last Olympics, administration had removed the entire two stroke and wheelers. Can we do this in India to restore the pollution free air for the major cities. US institute selected top 10 severely polluted locations out of 400 across the globe. Linfen, La Oroya, Dzerzhinsk, Norilsk, Chernobyl and Kabwe were also part of the list last year as well. Vapi in Gujarat is new entrant. Planning should respect ecology of the area where urban centers are to be developed. Land use should be determined on the basis of social and particularly environmental considerations and not on the basis of value alone.

Global warming is a natural geological process that could begin to reverse itself. Many people blame that global warming is due to carbon dioxide released in the atmosphere from burning the fossil fuels. However, the greater amount of carbon dioxide that enters – and leaves – the atmosphere as the part of natural cycle of water exchange from, and back into the sea water and vegetation. Global warming is the part of the cycle of warming and cooling that happened every 1500 to 5000 years for the last million years.

Global warming and related climate changes are likely to significantly increase the weather related risks facing human settlements, including floods, water and power supply failures and associated economic collapse. Global emissions of green house gases are likely to raise the world temperature and the sea level at the rate of 0.3°C and $6 \text{ mm } 10\text{y}^{-1}$ by the year 2100. This will result into increased water demand for crops and reduced crop yield. The Netherlands' Fortis Bank has won a bid to emit CO_2 in an auction that marks a new phase in the global carbon market. The bank paid more than 13 million Euros for the rights to emit 800,000 tonnes of CO_2 . The credits were made available through Kyoto Protocol's clean development mechanism. It is interesting to note that the city of Sao Paulo had developed a 30 million

tonnes mountain of rubbish. With this back drop, A National seminar was organized by **Indian Association for Air pollution Control (IAAPC)** on 16th October, 2004 in Vadodara, to discuss issues related to Eco-Degradation due to Air Pollution. Seventeen speakers presented their findings on varied subjects like Green belt technology, pollution management by eco-technology, eco-degradation around Dolomite grinding units, air pollution through use of appropriate technology, effect of pollution on kids lungs, metals as air pollutants, alternate fuels etc. the papers presented during seminar and some invited articles are compiled in this volume. We hope that articles will be accepted with great enthusiasm and will be read by researchers and common man with interest. We wish the methods suggested by speakers will be helpful in formulating national strategy to combat air pollution. Veda tells us, “**Om Shiva no vatah eva vantu Bhumo.**” Can we make our planet free from pollution so that pleasant breeze could blow on this planet Earth.

This is our proud moment for publishing third book from IAAPC. We are thankful to all the contributors for submitting their contributions for the book. We are thankful to Profs. S.D. Sabnis, M. Daniel, H.V. Bhavnani, Y.T. Jasrai, Dr. S.S. Bala and Shri B.R. Naidu, Zonal officer CPCB (West Zone) for their suggestions and kind help in organizing the National Seminar. The encouragement given by late Professors C.H. Pathak and G.P. Senan are highly appreciated. Our sincere thanks are due to Shri Pawan Kumar Sharma of Scientific Publishers (India), Jodhpur for nice printing of the book.

Arun Arya
S.J. Bedi
V.S. Patel

Vadodara, Gujarat
3-4-2009

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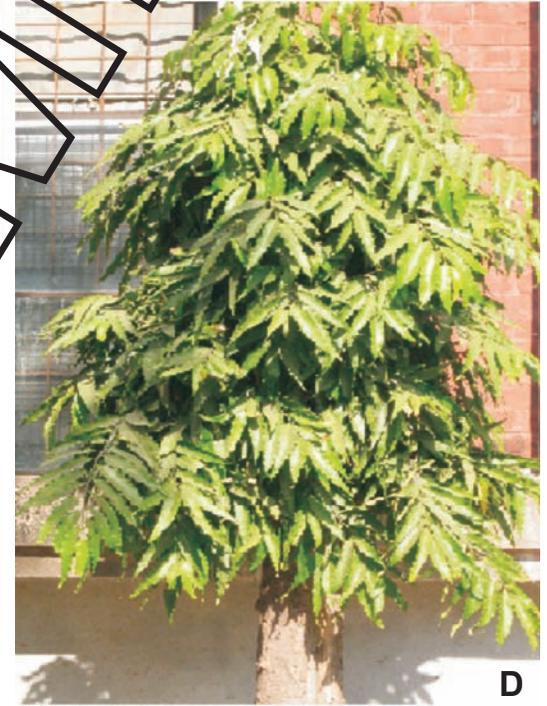
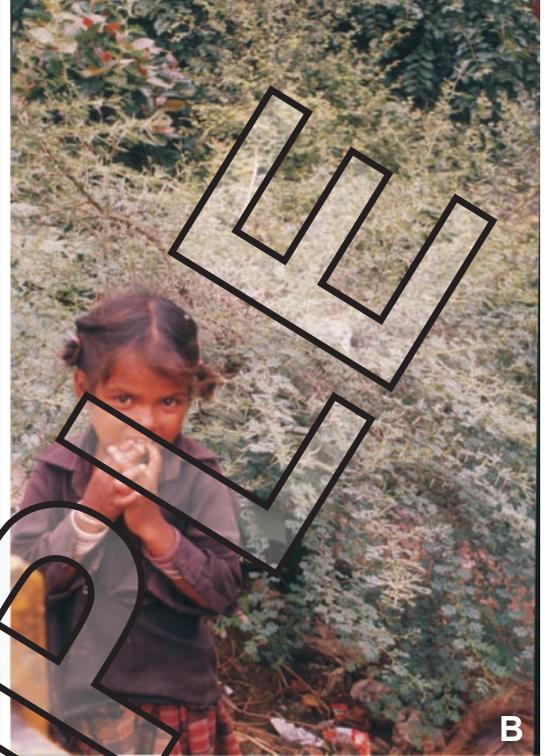
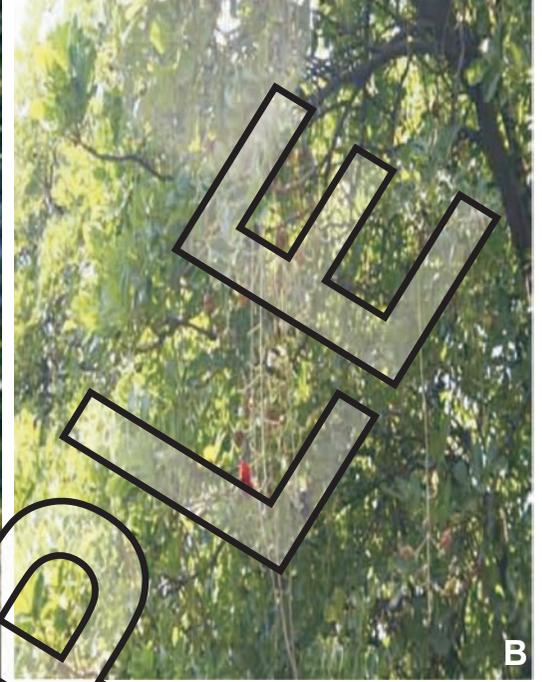


Plate - 1



B



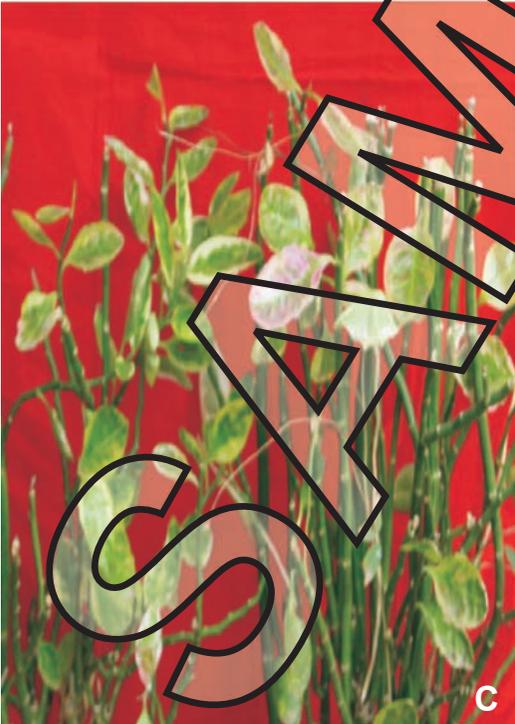
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A



B



C



D

Plate - I

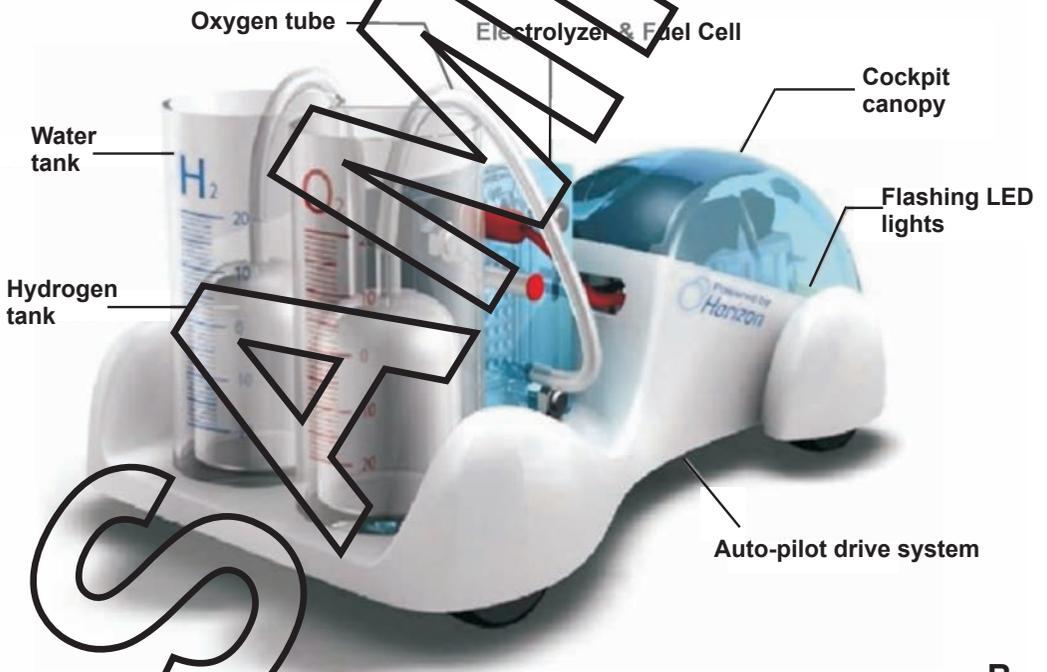
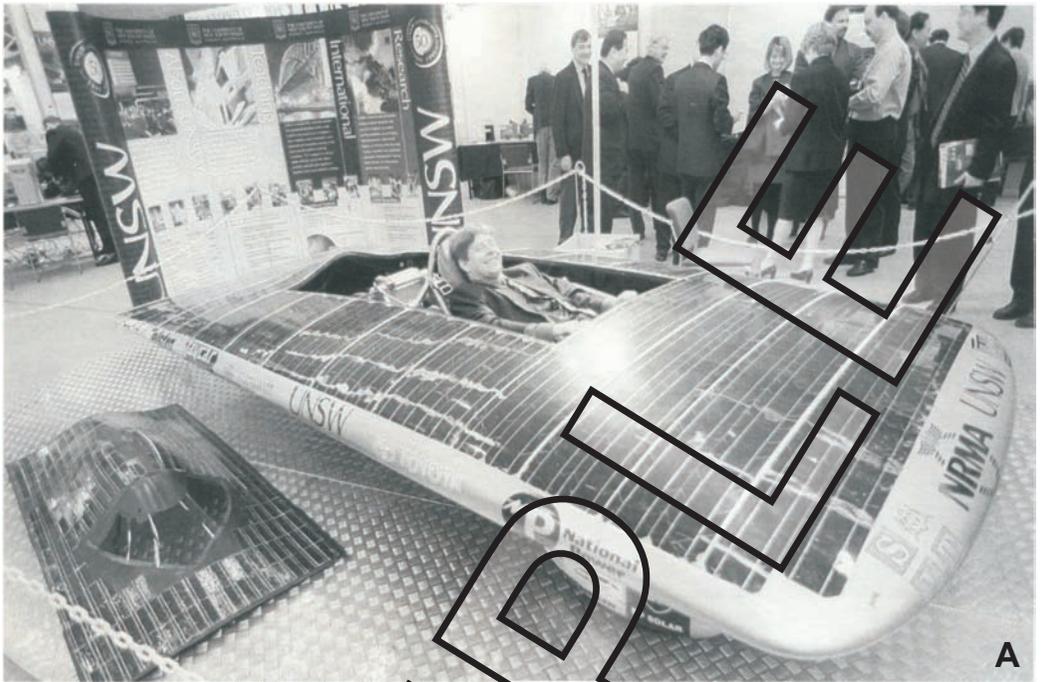
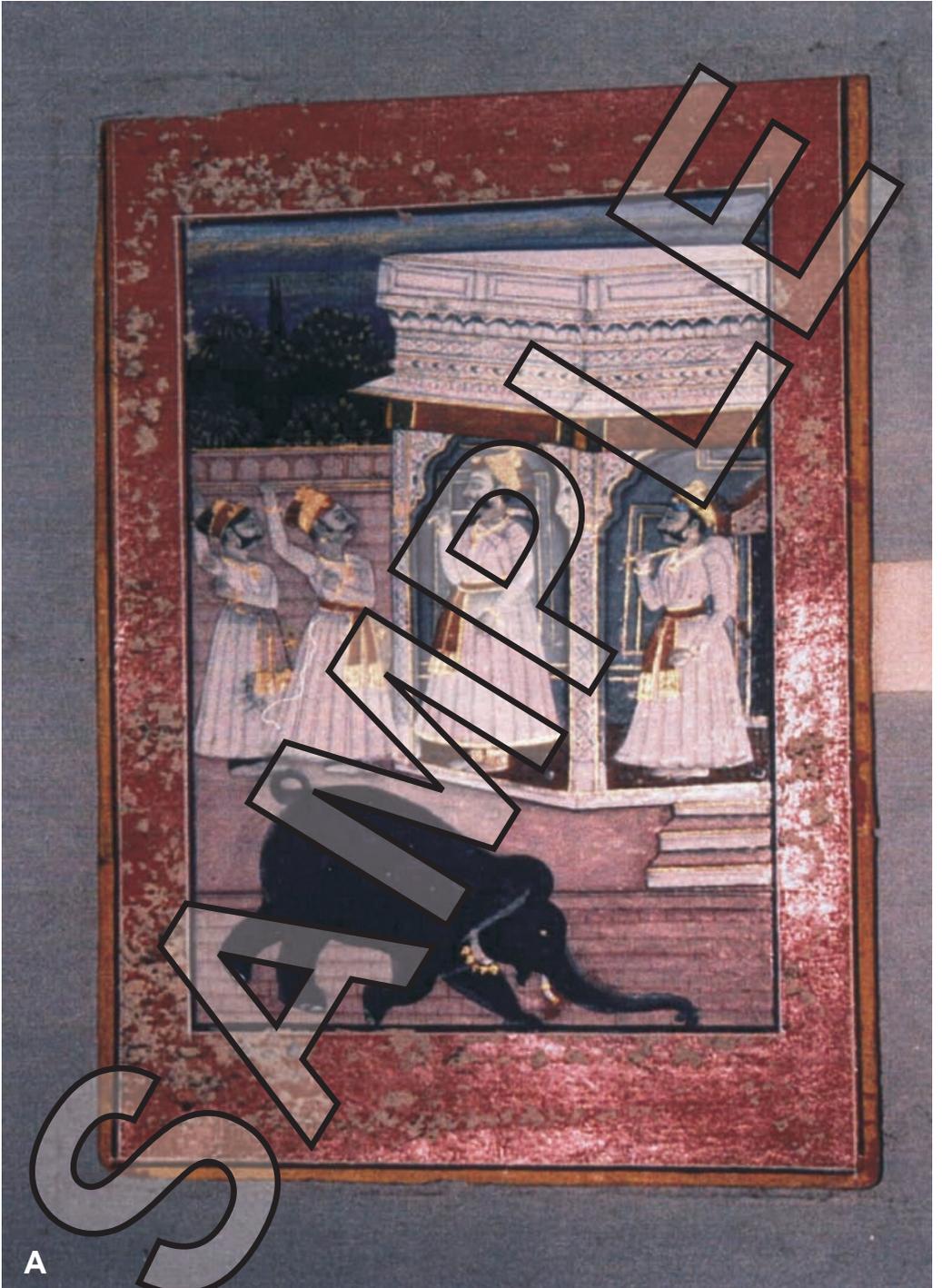


Plate - II



A

Plate - I



Plate - II



A



B

Plate - I