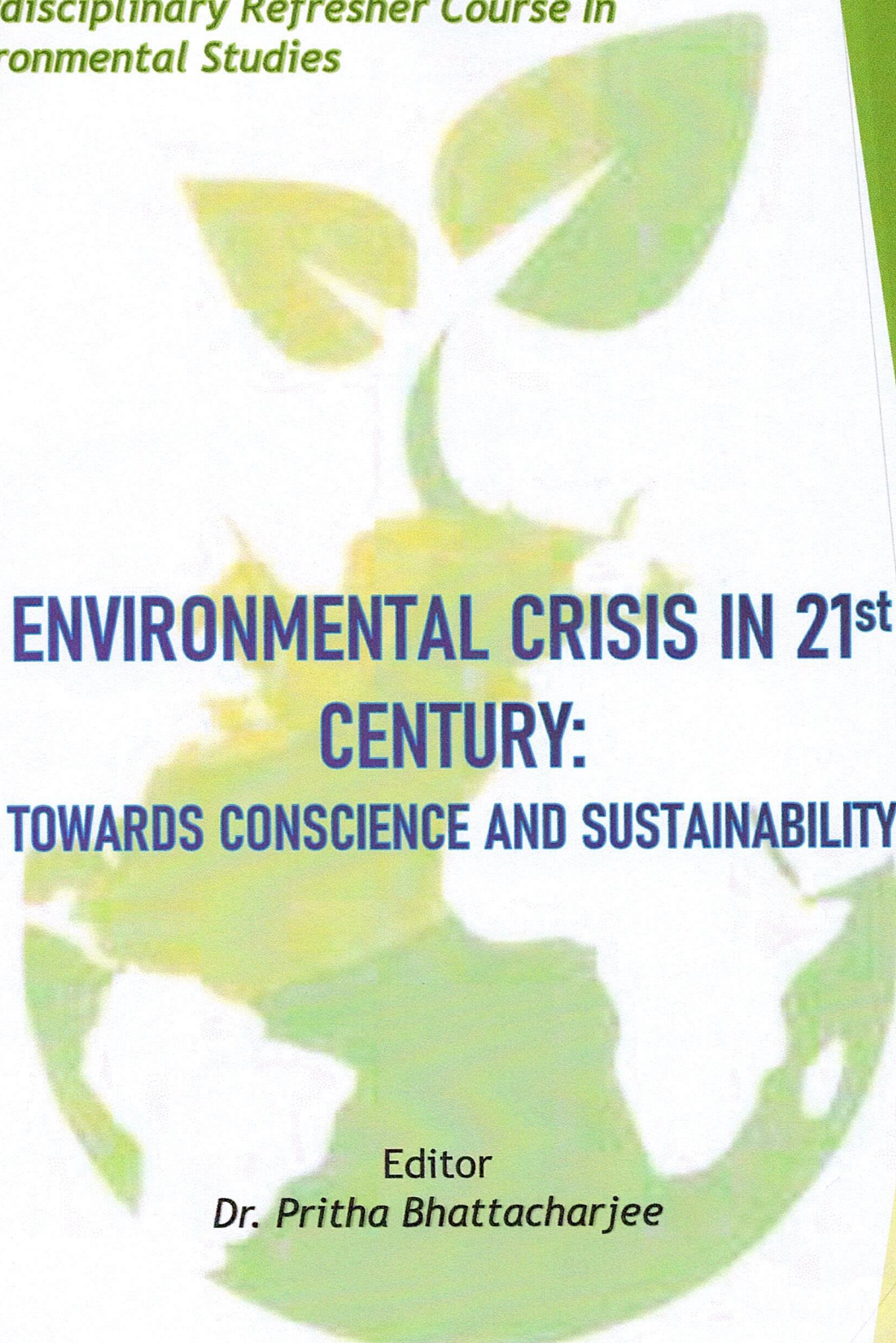


13.2-6  
UGC-HRDC, University of Calcutta  
Interdisciplinary Refresher Course In  
Environmental Studies  
2021



# ENVIRONMENTAL CRISIS IN 21<sup>st</sup> CENTURY: TOWARDS CONSCIENCE AND SUSTAINABILITY

Editor  
*Dr. Pritha Bhattacharjee*

Conducted by  
DEPARTMENT OF ENVIRONMENTAL SCIENCE  
UNIVERSITY OF CALCUTTA



*Pritha Bhattacharjee*  
Principal  
S.B.S.S. Mahavidyalaya  
Goaltore, Paschim Medinipur

# INDEX

Sl. No.	Topics
1	Foreward from Director, UGC-HRDC
2	From the Co-ordinator's desk
3	A Kaleidoscope of Memories- The Department of Environmental Science
4	Schedule of the program
5	Abstracts by subject Experts
6	Microteaching
7	Minireviews



*A. Anand*  
Principal  
S.B.S.S. Mahavidyalaya  
Goaltore, Paschim Medinipur

Ref. HRDC-CU/IRC/ Env-Stud./ 2021-22

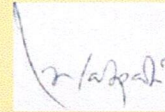
27 March 2021

### Foreword

This is to acknowledge the kind support rendered by the Department of Environmental Science, University of Calcutta, for organizing the UGC sponsored Inter/Multidisciplinary Refresher Course (IRC) in Environmental Studies through online mode during March 13-27, 2021 under the aegis of UGC-Human Resource Development Centre (HRDC), University of Calcutta. I am really grateful to all the faculty members and staffs of the Department, and also to the various authorities of the University for successful completion of the Course.

I am delighted to know that proceedings of IRC are going to be published in the form of seminar papers presented by the participants, who have joined in the programme to represent various domains of knowledge. Given the trends of environmental issues affecting our daily lives, multidisciplinary approach of research and pedagogy needs to be inculcated among the academics for better preparedness against any kind of adversity. I am sure that the contributions published in this book will of great interest for its readers, who may find new agenda to work upon.

Personally, as well as on behalf of UGC-HRDC, University of Calcutta, I congratulate the painstaking efforts taken by Dr. Pritha Bhattacharjee, Coordinator of the programme, and also its participants for bringing out the volume.



*Aladika*  
Principal  
S.B.S.S. Mahavidyalaya  
Goaltore, Paschim Medinipur

**ENVIRONMENTAL CRISIS IN 21<sup>ST</sup> CENTURY:  
TOWARDS CONSCIENCE AND SUSTAINABILITY**

PROCEEDINGS OF  
INTERDISCIPLINARY REFRESHER COURSE IN ENVIRONMENTAL SCIENCE  
UGC-HRDC, University of Calcutta

ISBN : 978-81-956065-8-0

2021

Department of Environmental Science  
35, Ballygunge Circular Road  
Kolkata 700019

**Published by : Dr. Pritha Bhattacharjee**  
Asst. Professor and Head,  
Department of Environmental Science  
Co-ordinator, Refresher course  
Editor email: pbenvs@caluniv.ac.in

**Assisted by:**  
Dr. Manabi Paul,  
Indraneel Rakshit & Shrinjana Dhar

**Design and Printed by :**  
**Creative Data Centre**  
58/32, Prince Anwar Shaw Road  
Kolkata 700 045  
Email: creative.174\_dc@yahoo.co.in



*Handwritten signature*  
Principal  
S.B.S.S. Mahavidyalaya  
Goaltore, Paschim Medinipur

## Chromium and its negative effects on the environment

Dr. Sankar Kumar Dey  
Department of Physiology, Santal Bidroha Sardha Satabarshiki Mahavidyalaya,  
Goaltore -721128, Paschim Medinipur

---

Chromium comes in a plethora of forms and shapes in nature. It is naturally occurring element, and can be both helpful and harmful to human health and the environment. Chromium is used mainly in metal alloys such as metal-ceramics, stainless steel, and is also used as chrome plating. It is unstable in an oxygenated environment. When exposed to air immediately produces an oxide layer which is impermeable to further oxygen contamination. Chromium enters the environment through both natural processes and human activities. Groundwater contamination may occur due to seepage from chromate mines or improper disposal of mining tools and supplies, and also improper disposal of industrial manufacturing equipment. It can affect the air quality through coal manufacturing which eventually can lead to water or soil contamination. Water contaminated with chromium causing negative health effects for aquatic animals resulting increased mortality rates in fish due to contamination. Chromium (VI) is one of the most dangerous forms and may cause health problems including allergic reactions, skin rash, nose irritations, ulcers, weakened immune system, genetic material alteration, kidney and liver damage, and may even go as far as death of the individual. There are currently no standards or regulations regarding hazard mitigation. Water purification is completely optional, but active carbon and ion exchanging filtering methods are both very effective in eliminating chromium contamination. Recently some of the nutritional antioxidants and medicinal plants play an important role in the management of different diseases in response to chromium induced environmental toxicity.



*Aphadikar*  
Principal  
S.B.S.S. Mahavidyalaya  
Goaltore, Paschim Medinipur