



Fly Ash Utilization For Sustainable Environment Management: Waste to Resource Material

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Published By:

SIES Indian Institute of Environment Management

Sri.Chandrasekarendra Saraswati Vidyapuram,
Plot No. 1E, Sector- V, Nerul, Navi Mumbai 400 706

Printed and Distributed By:

New Book Review Publishing House
B- 105, Paras Co- Op. Hsg. Soc. Ltd., Achole Road,
Nalasopara East, Dist. - Thane, Maharashtra- 401209





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Printing History: First Edition: June 2014

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ISBN 13: 978-81-929052-0-4

Published by:

SIES – Indian Institute of Environment Management
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New Book Review Publishing House
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FOREWORD

Fly ash generation is very substantial in our country considering the quality of coal available locally and the expansion of coal based thermal power generation units. I am told that a 500 MW thermal power plant releases nearly 500 t fly ash every day. India ranks fourth in the world in the production of coal ash as by product waste after Russia, USA and China. Fly ash management has taken considerable strides over the waste into wealth by exploring viable avenues. Fly ash is oxide rich and can be used as a raw material for different industries. Far from being considered as a nuisance fly ash is increasingly seen as valuable resource. A large number of technologies are emerging for the gainful utilization of fly ash in diverse areas such as cement industry, ceramics, brick manufacture, road laying, embankments, agriculture and waste water management. Unfortunately industrial utilization of fly ash is currently very low because of the justifiable economic reasons.

SIES Indian Institute of Environment Management, Nerul has successfully addressed the concerns of environment management through research and academic activities. They have further provided a momentum to the cause of fly ash utilization by its optimization with biofertilizers on onion and grape and disseminated the technology at farmer's field in Nashik (M.S.).

Fly ash utilization for sustainable environment management is a very timely theme in today's context of growing awareness on environmental issues. I wish the book will strengthen, spread the knowledge and ideas on the sustainable utilization of fly ash.

V. SHANKAR

Hon. President

South Indian Education Society

Mumbai







PREFACE

Energy, environment and economy are the three vital factors which decide a Nation's sustainable mode of progress. The interlink between these major factors require a periodic review and readjustment to ensure a harmonious development. Economic progress demands energy production and utilization which in turn lead to environmental degradation. An environmental aspect of energy generation is an important aspect which cannot be neglected. Coal based thermal power plants are the major source of power in our country but it also generates huge amount of fly ash. Nearly 63 percent of the India's total energy requirements are presently met from coal. The available coal reserves in India are sufficient to meet our needs for at least another 100 years. India now ranks 3rd amongst the coal producing countries in the world. Taking the above facts into consideration it is obvious that coal is one of the potential energy substitutes in India.

The annual generation of fly ash has increased from about 1 million tonne in 1947 to about 40 million tonne during 1994 and to about 220 million tonne at present. Until early 1990s fly ash was considered as a pollution causing waste but with the efforts of Fly Ash Mission of TIFAC and Fly Ash Unit under Department of Science and Technology, fly ash is known as a resource material with gainful utilization in different sectors. Fly ash has acquired the status of a "useful commodity" which opens up plenty of opportunities in terms of laying & fine tuning policies, conducting gainful businesses and R&D efforts, and addressing the concerns of environment at the same time.

The potential of fly ash and its sustainable utilization has been further strengthened by research and development activities through long term trials and consecutive implementation in almost all parts of our country. SIES Indian Institute of Environment Management (SIES- IIEM), Nerul is actively involved in the optimization and sustainable utilization of fly ash as a soil amendment in different plant species. The





generated technology has been transferred successfully to farmers in villages of Nashik and Panvel (M. S.).

In this context SIES Indian Institute of Environment Management (SIES - IIEEM), Nerul organized the National Conference on 'Fly Ash Utilization for Sustainable Environment Management'. This book is a compilation of research papers presented in the above Conference.

This compilation is possible due to encouragement, whole hearted support and valuable suggestions from South Indian Education Society (SIES) Management, particularly, our Chief Patrons, Hon. President Mr. V. Shankar and Hon. Secretary Mr. P. Sethuraman. We are also extremely grateful to Shri. M. Rammoorthy, Member, SIES Management Council for timely support and encouragement. Support from teaching, research and non- teaching staff of SIES- IIEEM as well as our students is gratefully acknowledged.

Dr. Seema Mishra
Dr. V. Ramachandhran





CONTENTS

Foreword	iii
Preface	v
1. Fly Ash Synergy..... <i>Vimal Kumar</i>	1
2. Environmental Concerns in the Reuse and Disposal of Fly Ash..... <i>A. K. Dikshit, Lokeshappa, B.</i>	14
3. Release of Selected Trace Metals from Class ‘F’ Fly Ash and Ground Water contamination..... <i>R. K. Singh, N. C. Gupta, B. K. Guha</i>	22
4. Coal Ash Management in the Thermal Power Stations of MAHAGENCO <i>Rajesh G. Morale</i>	30
5. Dirt to Asset: First Stabilize Ash..... <i>Sharad Chaphekar</i>	35
6. Applications of Fly Ash: A Review..... <i>S. A. Bhalerao, T. S. Kelkar, S. S. Sohel</i>	41
7. Applications of Fly Ash in Waste Water Treatment– A Review..... <i>Apoorva Worlikar, V.Ramachandhran, Divesh Lawande</i>	61
8. Potential of Fly Ash in Agriculture with Special Emphasis to Maharashtra..... <i>Sanjay Bhoyar</i>	81
9. Fly ash Advantages and Disadvantages in Soil Fertility and Crop Productivity <i>Sandeep Zaware, V.V. Patil</i>	92





10. Potential of Fly Ash in the Management of Early Growth of Grape Rootstocks Under Field Conditions.....	99
<i>Apoorva Worlikar, Nikita Parab, Seema Mishra</i>	
11. Role of Fly Ash in Nematode Control.....	113
<i>Abhishek Sharma, Satyawati Sharma</i>	
12. Fly Ash: A Suitable Material for Solid Waste Management Through Vermicomposting	124
<i>Ankita Naval, Ganesh Gajre, Seema Mishra, Amruta Diwan Dixit</i>	
13. Catalytic Evaluation of CoFe-Zet Micro-structured Zeolite for One Pot 4MCR to Synthesize Diiminocyclohexa-1, 4-diene-1, 4-dicarboxylate	137
<i>D. S. Raghuvanshi, J. R. Badgajar, P. P. Mahulikar, J. S. Meshram</i>	
14. Coal Fly Ash Utilization for Sustainable Environment Management: Crystallization Kinetics of MCM-41.....	150
<i>M.R. Deshpande, U.D. Joshi</i>	
15. Fly Ash Based Cement Composites for Sustainable Development.....	169
<i>D. D. Sarode</i>	
16. Optimum Usage of Fly Ash Generated by Means of Mechanical Activation Process..	178
<i>V. V. Patil, A. K. Bhonsale, Ganesh Kumar</i>	
17. An Overview of Performances of Fly Ash Based Concrete in Marine Environment ...	183
<i>S. C. Pattanaik</i>	
18. High Volume Fly Ash in High Rise Mass Foundation: A Case Study From RMC Readymix	198
<i>M. Suresh Rao, Uttam Bhandare</i>	
19. Optimizing Concrete Performance Using Fibers and Mineral Admixtures	207
<i>Jayie Shah, Ashita Sheth</i>	
20. Fly Ash Based Geopolymer Brick.....	214
<i>Asad Shaikh, Sayyad Sameer</i>	
Author's Index	224
Subject Index	226

