THE BUILT ENVIRON

News Letter

CBRI – ENVIS

Vol. 1, Jan. - March, 2004

From the Director's Desk…

ENVIS Node at Central Building Research Institute, Roorkee is bringing out **THE BUILT ENVIRON**, CBRI-ENVIS, News Letter from Jan.- March, 2004. The News Letter shall focus on various programmes/ activities on subject area fly ash in the country and elsewhere.

Best wishes to ENVIS Node team for the success and usefulness of the News Letter.

V.K. Mathur

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This series of news letter is a quarterly publication of ENVIS Node on subject area Fly Ash at Central Building Research Institute, Roorkee. The node is sponsored by Ministry of Environment and Forests (MoEF), Govt. of India, under the World Bank's Environmental Management Capacity Building Technical Assistance Project (EMCBTAP). The node is deeply involved in bringing out latest information on Fly ash generation, utilization and futuristic vision in regard to habitat. The content of the news letter may be quoted or reproduced for non-commercial purposes, provided source is duly acknowledged. Contributions to the news letter are welcome.

ENVIS Team…

Fly ash - *Background Information*

Fly ash is a burnt residue of pulverised coal (bituminous or sub-bituminous) and is siliceous in nature. With rapid growth of power sector, involving commissioning of chain of coal-based thermal power plants in the country, annual generation of fly ash has crossed 100 million tonnes (Fig.1)

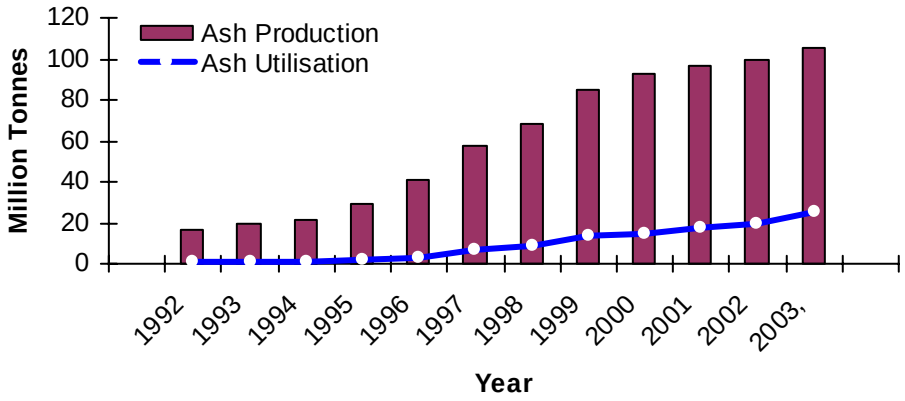

Fig 1. Fly ash scenario in India: Production versus Utilisation

Efficient management and disposal of this voluminous low–value by-product has posed serious challenge before the planners, environmentalists and technocrats. Some of the potential areas of fly ash utilization have been identified through continuous R&D efforts in the country and elsewhere. Of these construction sector, is one where bulk quantities of siliceous materials can be consumed. These siliceous resources can be gainfully substituted with fly ash in substantial quantities in construction activities. R&D efforts at Central Building Research Institute (CBRI), Roorkee have revealed that fly ash can be gainfully utilized cement and building products manufacture as well as in civil works with quality and adequate durability. Fly ash utilization in bricks and block making, besides in cement manufacture and concrete products has been demonstrated in a big way. In addition, technical feasibility of habitable reclamation of abandoned fly ash ponds has also been established with focus on environmental aspects of fly ash ponds on underground water and ambient air quality, besides its potential for use as geo-engineering and construction material.

Sufficient scientific and technical information on process technologies for fly ash based building products is available, yet the utilisation of fly ash has not attained even the targeted level of 30% of the present generation of fly ash, in the construction sector. The website on Fly ash **(www.enviscbri.org)** provides detailed information on processes, technologies and products as follows:

1. Bricks Manufacture
2. Light weight Aggregates
3. Cement Manufacture
4. Road Construction, Embankments
5. Back fills / Land Development
6. Mine filling

Major Activities/Action Plans

CBRI Leads Mission Mode Programme on New Building Materials

To meet the growing demand of construction materials for housing and building on one hand and need for conservation of natural wealth and resources including high energy consumption in production of traditional building materials, on the other hand, consolidated R&D efforts are needed for evolving process and technologies for new and alternative building construction materials. To develop low cost alternative building construction materials from conceptualization to commercialization through energy efficient and environment friendly building materials process and technologies using agro-industrial waste, for sustainable development is the main objective of this project. This programme will result in development of different product and processes /technologies such as fly ash bricks & blocks, interlocking clay-bricks, value-added materials from agro industrial waste, polymer composite building products, high strength blocks from waste and smart concrete. Development of value added products through gainful utilization of agro-industrial waste would help in preserving the environment. The Planning Commission, Government of India, New Delhi has approved the Project. Participating CSIR Laboratories in the Programme are - Central Building Research Institute (CBRI), Roorkee-Nodal Laboratory, Central Electro-chemical Research Institute (CECRI), Karaikudi, Central Fuel Research Institute (CFRI), Dhanbad, Central Glass and Ceramic Research Institute(CGCRI), Kolkata, Central Road Research Institute (CRRI), New Delhi, Indian Institute of Chemical Technology (IICT), Hyderabad, National Metallurgical Laboratory (NML), Jamshedpur, Regional Research Laboratories (RRLs), Bhopal, Bhubaneshwar, Jorhat & Trivendrum, Structural Engineering Research Centre (SERC), Chennai.

(Source: CBRI New Letter, Vol. 19(03), Jul.-Sept. 03)

National Workshop on Innovative Building Construction Machinery

A one-day National Workshop on "Innovative Building Construction Machinery" CONSMACH-2003 was organized by the Institute on August 22, 2003 at Roorkee. The Workshop was sponsored by CPWD and co-sponsored by M/s. PEC Hydraulics (India) Ltd., Yamunanagar, Build Tech Engineering Co., Roorkee etc. About 60 delegates have attended the workshop representing various organizations from various parts of the country.

(Source: CBRI New Letter, Vol. 19(03), Jul.-Sept. 03)

Conference on Indian Habitat and Infra-structure-Need for Innovative Approach

A conference on "Indian Habitat and Infra-structure-Need for Innovative Approach", was organized by the Institute during 25-26 September, 2003 as a mark of Diamond Jubilee celebrations of CSIR.

The conference was inaugurated by Shri L.M. Mehta, Secretary, Urban Employment & Poverty Alleviation as Chief Guest. Dr. Prem Vart, Director,

IIT, Roorkee and Shri K.K. Trivedi, Secretary General, All India Flat Glass Manufacturers Association (AIFGMA) were the Guest of Honour at this occasion. The other dignitaries who attended the conference were Dr. D.N. Trikha, from DST, Prof. Aditya Prakash, Ex. Principal, School of Architecture, Chandigarh, Architect J.R. Bhalla, Ex-President, Council of Architecture; Ar. P.R. Mehta, President, Council of Architecture, Shri J.N. Bhawani Prasad, DG, CPWD and delegates from different parts of the country.

Mr. L.M. Mehta, Secretary Urbon Employment & Poverty Alleviation, Govt. of India speaking as Chief Guest on the occasion emphatically stressed the need of equal distribution of infrastructure facilities in urban and rural areas and development of eco-friendly technologies based on non-conventional sources of energy. He stressed on the energy conscious approach for designing houses and the new settlements.

The conference deliberated on the issues related with R&D and future perspective, housing policies and programmes, materials & construction technologies, cost economics & financial mechanism, energy & environmental concerns, measures for natural disasters and Infrastructure developments & needs in four technical sessions chaired by Shri P.R. Mehta, Dr. D.N. Trikha, Ar. V.K. Mathur and Shri J.R. Bhalla. There were 77 technical papers contributed by authors on different themes. About 25 papers were presented including papers by key speakers and principal speakers. The key speakers include the eminent persons like Shri T.N. Gupta, Executive Director, BMTPC, Shri V.K. Mathur, Director, CBRI, Shri Suresh Goel, Aditya Prakash etc

(Source: CBRI News Letter, Vol.19 (03), July – Sept, 2003)

News Briefs

Training Programme

In order to popularize technology of making Fly ash bricks, Fly ash Utilization Programme (FAUP), TIFAC, New Delhi proposed to organize short-term training along with Central Building Research Institute at different locations in the country. Two day demonstration cum training programmes will include technical tested for quality. Schedule of demonstration cum training programme is being finalized in consultation with Thermal Power Plant Officials.

Seminars / Workshops

Ash Utilization Seminar-Cum User's Meet held at Vindhyachal Super Thermal Power Project, P.O. Vindhyanagar Distt. Sidhi (MP)

Seminar-Cum User's Meet at NTPC Vindhyachal was organized on Jan. 22, 2004. The seminar was inaugurated by and attended by over 80 delegates representing large section of brick kiln owners, VSTPP officials. Dr. Vimal Kumar, Director, Fly ash Utilisation Programme, New Delhi, Dr. J.M. Bhatnagar, CBRI, Shri Guruvittal, CRRI and M.P. State pollution Control Board Officials delivered the technical lectures in the seminar.

Seminar on "Recent Trends in Building Materials (RTBM-2004)" Building and construction industries are

growing at a faster pace than other sectors specially in developing countries. In order to meet the requirement of the housing for growing population, government and non-government institutions are making necessary efforts. Although market is flooded with large range of building materials, there is always a hunt for superior quality and cost effective materials. Significant R&D work has gone in for the use of innovative suitable materials. The topic has gained relevance as never before due to a variety of needs and advancements in the materials technology. Keeping in view the present day needs a National Seminar on Recent Trends in Building Material has been organized by Regional Research Laboratory, Bhopal during 26-27 Feb., 2004 to discuss and deliberate on innovative building materials with focus on conservation of material and energy resources.

Awareness Programme on Fly Ash Utilisation at Karnal

At the Instance of Karnal District Brick Kiln Owners Association Karnal (Haryana) an Awareness programme on flyash utilisation in brick making was organized by Small industries Service Institute, Karnal (Haryana) on Feb. 25, 2004. The programme was attended by over 60 brick kiln owners of Karnal District besides State Govt. officials representing Haryana State Pollution Control Department. Dr. J.M. Bhatnagar delivered two technical lectures and represented the CBRI Node in the programme.

Assignment(s) undertaken at CBRI

Central Building Research Institute has undertaken a short term project entitled "Techno feasibility for making clay-fly ash bricks in Raebareli area". Site survey and collection of test materials (i.e. clay and fly ash) Unchahar have been accomplished by Shri R.K. Goel, Sr. Scientist. Laboratory investigations are in progress.

Central Building Research Institute has undertaken project on Fly ash Disposal and Management at Mithapur. Site survey and field investigations have been undertaken by a team of CBRI scientists and Geotechnical Engineers under the leadership of Shri A.Ghosh.

Books

Exploring Earth's Environment, Version 1.0

Michael Kelly, Michael Ort, Jay Shiro Tashiro Nothern Arizona University, USA

For use in classes on Environmental Science, Environmental Geology, Physical Geology, Physical Geography and Earth Science. VR Excursions uses advanced interactive technology to give students access to a variety of complex environments (a nuclear waste disposal site, a coal-fired power plant and a solid waste landfill site). These virtual environments are rich enough that they can be tailored to professor's individual course goals or they can be used with the accompanying lab manual and Instructor's Manual as turn-key method of using the computer to give students "hands-on" field experience in the Earth and environmental sciences.