

Centre for Environmental Science and Engineering

(Annual Report 2011-2012)

Introduction and an Overview of the Centre

The Centre for Environmental Science and Engineering (CESE) was established in 1985. The Centre has a core group of 9 faculty members (8 regular and 1 emeritus) with multi-disciplinary background and diversifying research interests. In addition to the above 9 faculty members, one visiting faculty also joined CESE in January 2011 for one semester. Apart from this, the professionals from consultancies and government organizations come for delivering the lectures time to time. Currently, the centre is expanding teaching and research activities and has started a new dual degree M.Sc. – Ph.D. programme since July 2010 in addition to already existing M. Tech. and Ph.D. programmes. In addition to these three programmes, the centre is running a minor in Environmental Science and Engineering for undergraduates studying in other departments at IIT Bombay. In near future, a dual degree B. Tech.- M. Tech. programme will also be started. In addition to the above listed programmes, CESE offers an Institute core course “Environmental Studies: Science and Engineering” to undergraduates and M. Sc. – Ph. D. students. Besides, the centre runs several elective courses for sensitizing students across all disciplines towards the urgent need for protection and restoration of environment by adapting environment friendly life styles.

The on-going research activities of the Centre are focused towards addressing the priority areas (local and global) set by major national agencies like MHRD, CPCB, SPCB, MNRE, DBT, MoEF, CSIR, DST, AICTE. In addition, the Centre has already established strong links and collaborations with leading industries, academic institutions and national/international agencies by conducting sponsored research and offering consultancy and technical services. The research activities of CESE are supported by excellent experimental and computational facilities, competent and dedicated technical staff and high quality students. The centre is also actively engaged in organizing workshops and CEP courses for benefiting the professional from other academic institutions, industries and governmental sectors.

Important MoUs and Collaborations

Infrastructure development:

Renovation of Microbiology and Hazardous waste Lab (Ground floor)

Academic Programmes

CESE currently offers M. Tech., Ph. D. and M.Sc.-Ph. D. programmes in Environmental Science and Engineering with a strong focus in teaching and research.

Degrees Awarded last year

M. Tech. : 15
Ph. D. : 4

Scholarships: Information is provided in the table given below.

| Category | Number of Students Admitted Under Each Programme in 2011 | | |
|--|--|-------------|--------------------|
| | <u>M. Tech</u> | <u>Ph.D</u> | <u>M.Sc.-Ph.D.</u> |
| Institute Teaching Assistance (TA) | 16 | 7 | 9 |
| External sponsored College Teacher (CT) Industry | 2 | 2 | - |
| Project sponsored (PS) | - | 1 | - |
| UGC/CSIR/DBT / QIP/CPHEO fellowship holders | - | 2 | - |

R&D Activities

Two new projects have been awarded in 2011-2012. The details of the projects are given below.

Sponsored Research Projects**Sponsored Research Projects:**

New : 2
Ongoing : 4
Completed : 14
Faculty Involved : 6

New Projects

“Characterization and Treatment of Wastewater from Large /Small Scale Biomass Gasification Systems” by IIT Bombay, by ACCESS Scheme

“Biological Treatment of Biomass Gasifier Wastewater Using Algal-Bacterial System in Rotating Biological Contactor” by DBT, New Delhi

Completed Projects

“Surfactant Aided Biodegradation of Model NAPLs” by DST, New Delhi

“Sampling and Analysis Techniques for Bioaerosol Standardization and Field Evaluation of Airborne Endotoxins” by DST, New Delhi

“Sampling and Analysis Techniques for Bioaerosols” by DST, GOI

“Development of Two-Step Treatment Strategy For Effluent Generated From Agro Based Pulp And Paper Mills” by DST, New Delhi

Ongoing Projects

“Life Cycles of Metals in Coal Combustion: Speciation in Fly Ash, and Transformations during Ash Reuse and Storage” by MacDonnald Research Scholars Academy, Washington University, St. Louis, USA

Indo-South African Collaborative Sponsored Research Project “Energy Recovery Options from Municipal Solid Waste and Control Treatment Measures of Carbon Emissions from Landfills” by DST, New Delhi

“Climate Change Research: Atmospheric Aerosol Characterization using Multi-Sensor Data from Satellite and Ground Observations” by Lloyd Register Engineering Education and Research Trust

“Environmental Quality and Pollution: Ganga River Basin Management Plan” by MoEF, New Delhi

“Simultaneous Nitrification/ Denitrification of Nitrogen Fertilizer Wastewater using Sequencing Batch Bioreactor with Mixed Biomass Containing *Thiosphaera Pantotropha*” by DBT, New Delhi

“Measurement and Characterization of Airborne Biological Particles” by DST, GOI

“Wastewater Minimization In Batch Plants Through On-Site Treatment, Reuse And Recycle Processes” by DST, New Delhi

“Energy Recovery Options From Municipal Solid Waste And Control/Treatment Measures of Carbon Emissions From Landfills” by DST, New Delhi

“Simultaneous Nitrification/ Denitrification of Nitrogen Fertilizer Wastewater Using Sequencing Batch Bioreactor With Mixed Biomass Containing *Thiosphaera Pantotropha*” by DBT, New Delhi

“Degradation of Phenolic Wastewater Using Catalytic Wet Oxidation Process” by IRCC, IIT Bombay

Constructed Wetlands and Natural Treatment Systems for Wastewater Treatment and Reuse *i.e* “Saph Pani” by European Commission

Preventive Technological Interventions for Improving Environmental Attributes of Ship Recycling in Alang *i.e.* “Green Alang” Initiative by Gujarat Maritime Board, Govt. of Gujarat

Dismantling of Vessels with Enhanced Safety and Technology *i.e.* “DIVEST” by European Commission

Ganga River Basin Environment Management Plan (GRB-EMP) by MoEF, GOI

Consultancy Projects :

Consultancy Projects

A total of on consultancy jobs were undertaken by 2 faculty members. Total income generated from consultancy work was Rs. 2.9 crores..

Patents

Asolekar, S.R.

Indian Patent Application No. : 2475/MUM/2010 (In progress)

“Site Remediation Technology”

(Remediation Technology for Soils, Sediments and Aquifers Solids at Sites Contaminated by Oil Spills or Hazardous Wastes)

Extension Activities

Sethi V.

A joint proposal was submitted by IIT Bombay and New Castle University, “Newcastle and Mumbai Partnership on Sustainability and Environment Research (NAMPSER)” under UKIERI, British Council.

An MoU was signed between IITB-TISS for research and academic collaborations.

A two–days retreat was organized for all IITB faculty under FARM-2012 (Faculty Research and Academic Meet) on IITB Campus to brainstorm with focus on Research at IITB.

A meeting was held between the core organizing team of the MAGEEP -2012 symposium (TISS, WUSL and IITB) on December 10, 2011 as a part of the ICAER to develop a roadmap for the ACCESS initiative. The meeting included invitation to several NGO’s working in the area of rural energy supply.

Asolekar, S.R.

Chairman of the "Technical Committee" and member of the "Organization Committee" for the IEA Annual Conference (*EnviroVision2011*) organised by the Indian Environmental Association (IEA) entitled *Advances in Environmental Management and Technology* during November 24 - 26, 2011 in Ahmedabad.

"Hazardous Wastes Management" A *CEP course organized for Andhra Pradesh Pollution Control Board* in IIT Bombay, Mumbai; April 11-14, 2011.

"Hazardous Wastes Management" A *CEP course organized for Andhra Pradesh Pollution Control Board* in IIT Bombay, Mumbai June 26-29, 2011.

"Management of Common Effluent Treatment Plants (CETP)" A *CEP course organized for Bangladesh Exports Processing Zones Authority, Dhaka, Bangladesh* in IIT Bombay, Mumbai; November 15 - 18, 2011.

Dikshit, A.K.

CESE organised International Workshop on "*Environmental Statistics for Professionals*" (ESP2011) jointly with Thadomal Shahani Engineering College, Mumbai at Mumbai, December 27-30, 2011.

Prof. Dikshit visited the Civil and Environmental Engineering Department at the Hong Kong University (HKU) on January 10, 2012. Paid visit to *Environment and Molecular Biotechnology Laboratory* to learn ongoing research works and explored possibility of joint research collaborations.

Mukherji, S.

Training programme on "Biology in Pollution Mitigation, Sewage Treatment, In-situ Bioremediation and Bacteriophages" 13th-15th Feb, 2012, IIT Bombay, sponsored by, Central Pollution Control Board (CPCB), New Delhi.. Participants were officers from various State Pollution Control Boards, CPCB Zonal Labs and other Government organizations. Course Coordinator: Prof. Suparna Mukherji

Mukherji S., Garg A.

Indo-Canadian Bilateral Workshop on "Management and Valorization of Industrial and Agricultural Wastes" (MVIAW 2011) held on 12th October, 2011 in IIT Bombay; jointly organized by CESE IIT Bombay, INRS & Laval University, Quebec City, Canada, Sponsored by the Ministry of Education and Sports, Quebec, Canada. Convenors: Prof. Suparna Mukherji and Prof. Anurag Garg, CESE, IIT Bombay; Prof. Satinder Brar, INRS, Canada and Prof. Stephane Godbout, Laval University, Canada.

Visitors to the Department

Prof. Auroop Ganguly, Associate Professor, Civil and Environmental Engineering, Northeastern University, Boston, MA 02115.

Dr. Debashish Raha, FIE Australia (Chemical and Environmental Engineering) Engineers, Sydney, Australia.

Dr. Aindrila Mukhopadhyay, Staff Scientist, Physical Biosciences Division, Lawrence Berkeley National Laboratory, Berkeley CA 94720.

Director, Fuels Transport and Toxicity, Omies Studies, Joint BioEnergy Institute, Emeryville, CA 94608.

Mr. Mervyn Goronszy, Bisco Pty Limited, Australia. Delivered seminar on “Why All Sequential Batch Reactors (SBRs) Are Not Equal” on 1st February 2012.

Prof. Daniel E. Giammar, Associate Professor, Department of Energy, Environmental and Chemical Engineering, Washington University, Saint Louis, Mo, USA. Visited to discuss research findings in joint research project during December 9-11, 2011.

Prof. Satinder Brar, INRS, Canada. She delivered a lecture on “Sustainable value-addition of Agro-Industrial Wastes into bio-products and their application” in the Indo-Canadian Bilateral Workshop on “Management and Valorization of Industrial and Agricultural Wastes” (MVIWA 2011) held on 12th October, 2011 in IIT Bombay.

Prof. Stephane Godbout, Laval University, Canada. He delivered a lecture on “Life Cycle Analysis of Agricultural Wastes” in the Indo-Canadian Bilateral Workshop on “Management and Valorization of Industrial and Agricultural Wastes” (MVIWA 2011) held on 12th October, 2011 in IIT Bombay.

Conferences/ Symposia/ Workshops/ Seminars (Participated/Papers Presented)

National

Patil, R.S.

Chaired the Session I “Green Initiatives” Int. Symposium on a Sustainable Future – 2012 on Jan. 21-22, 2012 at Indira Gandhi Institute of Development and Research, Mumbai.

Hiremath, A. M., Tilwankar, A. K., Asolekar, S. R.

"Research and Development Activities in Alang" in 3rd *National Conference on Ports and Infrastructure* held in Ahmedabad; September 16 - 17, 2011.

Asolekar S.R.

"Significance of Risk Based Application of Technology" in the IEA Annual Conference *Advances in Environmental Management and Technology (EnviroVision2011)* organised by the Indian Environmental Association (IEA) held in Ahmedabad; November 26 - 27, 2011.

Asolekar, S. R. (2012)

"Green Ship Recycling in Alang" in *Ninth Annual Conference on Ports in India-Capacity Expansion and Improving Efficiency: The Way Forward* held in Mumbai; January 30 - February 1, 2012.

Mandal S.K., Banerji T., Chaudhari S.

Mobilization of Arsenic from Arsenic Removal Plant Sludge, presented in the 27th *National Convention of Environmental Engineers organised by Institute of Engineers (India)* on 24-25th January, 2012 in Mangalore, India.

Chaudhari S.

Performance of Handpump Attached Indigenous Arsenic Removal Filter based on Zerovalent Iron presented an invited lecture in the National Conference on *Water Purification Technologies & Management* held on 8-9th February, 2012 at Nerul, India.

Chaudhari S.

Attended the International Conference on Water Quality with special reference to Arsenic, held on February 18-20, 2012 at Kolkata, West Bengal.

Jeswani, H., Mukherji, S.

Presented a paper "Comparison of Acute Toxicity of Algal Metabolites using Bioluminescence Inhibition Assay", 27th National Convention of Environmental Engineers on Green Technologies, Sponsored by the Institution of Engineers, January 24-25, 2012, NIT Suratkal, Mangalore, Karnataka, India.

Phatak, P.S., Garg, A., Gupta, S.K., Mukherji, S.

Presented a paper "Impact of Media Composition on Abiotic Losses During Biological Nitrogen Removal from Nitrogen Rich Industrial Wastewater" 27th National Convention of Environmental Engineers on Green Technologies, Sponsored by the Institution of Engineers, January 24-25, 2012, NIT Suratkal, Mangalore, Karnataka, India.

Mukherji, S.

Presented a paper "Treatment of Biomass Gasification Wastewater" Annual Symposium on Energy Futures, organized by IIT Bombay Monash Research Academy, November 26-28, 2011, IIT Bombay, Mumbai, India.

Mukherji, S.

Presented a paper "Fate of Organic Pollutants in Aquatic Environment" Mini Symposium on Aquatic Environment and Health Management: Status and Challenges, June 2, 2011, Central Institute of Fisheries Education (CIFE), Mumbai, India.

Garg A.

Delivered an invited talk in a National Conference on *Cleaner Production for Greening Industries: Steps to Sustainability*" held on 31st March 2011 at Sardar Patel Mahavidyalaya, Chandrapur, Maharashtra.

International**Varughese, J.M., Madav, V., Sethi, V., Patwardhan A.**

Accepted for visual poster presentation "Model for Techno-economic Evaluation for Electricity Generation from Biomass Gasification" in the 20th European Biomass Conference and Exhibition-EUBC &E 2012, to be held at Milan, Italy from 18 June to 22 June 2012

Madav, V., Bhusnoor, S., Bhandarkar, U.V., Sethi, V., Parikh P.P.

Accepted for oral presentation, "Hot gas clean-up studies in small scale low temperature down draft gasifiers" in the 5th International Freiberg Conference on IGCC & XtL Technologies-IFC2012 to be held at Leipzig, Germany during May 21-24, 2012.

Sharma, R., Deodhar, N.M., Patil, R.S., Sethi, V.

“Ventilation Design for Indoor Air Quality Management as per Indian Climatic Conditions”, Healthy Buildings 2012 ISIAQ to be held in Brisbane Australia from 08/07/2012 to 12/07/2012

Patil, R.S., Sethi, V., Sharma, R.

Accepted “Design for Indoor Air Quality Management”, EIA 2012 National Conference & Exposition held during March 22 through March 24, 2012, SanDiego, CA, USA.

UKIERI Project with Newcastle, FARM, ITB-TISS MoU, December 10, 2011 ICAER ACCESS Roadmap

Patil R.S., Balasubramanian S.

“Indoor Air Quality in Schools of Different Socio-economic Status in Mumbai”
The 12th Int Conf on Indoor Air Quality and Climate, June 5-10, 2011, Texas, Austin

Patil R.S., Chandorikar N.

“Assessment of Health Benefits due to Reduction in Personal Exposure”, *The 12th Int Conf on Indoor Air Quality and Climate*, June 5-10, 2011 Texas, Austin

Gangamma S., Patil R.S., Mukherji, S.

“Measurement and Characterization of Biological Activities of Ambient Particular Matter at Different Locations in Mumbai”, *AWMA’s 104th Annual Conf & Exhibition*, June 21-24, 2011, Orlando, Florida, US

Sonawane, N.V., Patil, R.S., Sethi, V.

“Health Benefit Modeling and Optimization of Vehicular Pollution Control Strategies”, *AWMA’s 104th Annual Conf & Exhibition*, June 21-24, 2011, Orlando, Florida, US

Patil, R.S., Sethi, V., Sharma, R.

“Ventilation Design for Indoor Air Quality Management”, Environmental Information Association 12th National Conference & Exposition, March 21-25, 2012, San Diego, CA, USA

Asolekar S.R.

“Management Strategies for Polluted Sediments” in *3rd International Conference on Sediment Management (I2SM – 2012)* held in Alibag during March 20 - 22, 2012 jointly organised by Association of Environmental Analytical Chemistry of India, Bhabha Atomic Research Centre, India and Mines de Douai, Paris, France.

Dikshit, A.K.

Participated in 2012 2nd International Conference on “*Life Science and Technology*” (ICLST 2012) at Hong Kong, January 5-7, 2012. Also presented paper titled “Adsorption of O-Cresol using Activated Carbon” in the conference.

Chaudhari S., Pramanik S., Banerji, T.

“Electrochemical Synthesis of Magnetite and its Applicability as an Adsorbent for Arsenic”, presented in the *Conference on Arsenic in Groundwater in Southern Asia*, on 14-17th November, 2011 at Hanoi, Vietnam.

Mandal, S.K., Banerji T, Chaudhari S.

“Studies on the possibilities of Solidification/Stabilization of Arsenic Laden Iron Hydroxide Sludge, presented in the *Conference on Arsenic in Groundwater in Southern Asia*, on 14-17th November, 2011 at Hanoi, Vietnam..

Banerji T., Chaudhari S.

Development and Field evaluation of the IITB-Arsenic filter, presented in the *Conference on Arsenic in Groundwater in Southern Asia*, on 14-17th November, 2011 at Hanoi, Vietnam.

Agnihotri, S., Mukherji, S., Mukherji, S.

Presented a paper “Synthesis and Characterization of Silver Nanoparticle containing Glass Fibers for Antimicrobial Applications”, *International Conference on Nanoscience and Technology (ICONSAT - 2012)*, January 20-23, 2012, Hyderabad, India.

Agnihotri, S., Mukherji, S., Mukherji, S.

Presented a paper “Evaluation of Chitosan-PVA Hydrogel as a Nanoreactor and an Immobilization Matrix for Silver Nanoparticles”, *International Conference on Advanced Nanomaterials and Nanotechnology (ICANN-2011)*, 08-10 December 8-10, 2011, IIT Guwahati, Assam, India.

Mukherji, S., Jeswani, H.,

Presented a paper “Treatment of biomass gasifier wastewater in a rotating biological contactor”, *IWA Biofilms Conference 2011: Processes in Biofilms*, October 27-30, 2011, Tongji University, Shanghai, China.

Mukherji S.

Presented a paper “Management of Wastewater from Tanneries” *Indo-Canadian Bilateral Workshop on Management and Valorization of Industrial and Agricultural Wastes (MVIW 2011)*, 12 October 12, 2011, IIT Bombay, Mumbai, India.

Mukherji S.

Participated in the International Workshop on *Public Private Partnership (PPP) Models and Technological Solutions in Sewage and Waste Management*, September 22-23, 2011, IIT Delhi, New Delhi, India.

Conferences/ Symposia/ Workshops/ Seminars (Coordinated/Chaired by Faculty)

Chairman of the technical session on Industrial Environmental Management in the “*National Conference on Environmental Perspectives and Challenges for the 21st Century (EPC2011)*” organised by A.U. College of Science and Technology in association with A.P. Pollution Control Board at A.U. Visakhapatnam on June 28-29, 2011.

Chairman of International Workshop on “*Environmental Statistics for Professionals*” (ESP2011) being organised jointly by IIT Bombay and TSEC, Mumbai at Mumbai, December 27-30, 2011.

Chairman of the 2012 2nd International Conference on “*Life Science and Technology*” (ICLST 2012) organised by Asia-Pacific Chemical, Biological & Environmental Engineering Society at Hong Kong, January 5-7, 2012.

Chairman of the 2012 2nd International Conference on “*Clean and Green Energy*” (ICCGE 2012) organised by Asia-Pacific Chemical, Biological & Environmental Engineering Society at Hong Kong, January 5-7, 2012.

Chairman of the 2012 3rd International Conference on “*Environment and Sustainable Development*” (ICESD 2012) organised by Asia-Pacific Chemical, Biological & Environmental Engineering Society at Hong Kong, January 5-7, 2012.

Invited Lectures

National

Sethi, V., “The ACCESS Initiative”, RuDiCON-2012, Rural Energy Security Through Distributed Clean Power Generation, Indian Merchants Chamber, Mumbai, January 20, 2012

Dikshit, A.K.

“Minimising the Environmental Impacts of Refinery Operations using LCA Approach”. A.U. College of Science and Technology, Visakhapatnam on June 28-29, 2011.

Mukherji, S.

“Algal-Bacterial System for Treatment of Oily Wastewater in an Attached Growth Bioreactor” Department of Biological Sciences, Birla Institute of Technology and Science (BITS) Pilani, Goa, India, January 12, 2012.

Mukherji, S.

“Bioremediation of Oily Wastewater and Sludges and Impact of Surfactants” Department of Civil Engineering, IIT Kharagpur, Kharagpur, India, July 7, 2011.

Garg, A.

“Options for Material Recycling and Energy Recovery From Municipal Solid Waste in India,” Indian Institute of Petroleum, Dehradun, June 6, 2011.

International

Asolekar, S. R.

“The Ship Recycling Concept of Green Alang” Invited by the International Maritime Organization (IMO), London, U.K. to speak at the 6th *Annual Ship Recycling Conference* held during June 14-15, 2011 in London, U.K.

Asolekar, S. R.

Invited to deliver a seminar on “Development in Alang and the Education and Training Activities within Green Alang Initiative” at the Ship Owners’ Association, Oslo, Norway on 13th May, 2011.

Asolekar, S. R.

Invited to deliver a seminar on “Green Dimensions of Ship Recycling in India” at University of Lund, Lund, Sweden on 12th May, 2011.

Asolekar, S. R.

Invited to deliver a seminar on “Preventive Environmental Strategies used in Ship Recycling in India” at Linneus University, Kalmar, Sweden on 10th May, 2011.

Dikshit, A.K.

‘Achieving Sustainable Future for Society and Industry’. Indira Gandhi Institute of developmental Research, Mumbai on January 19, 2012.

“Biotechnology and Environment”. International Conference on “Life Science and Technology (ICLST 2012)” held on January 5-7, 2012 at Hong Kong.

Significant Awards/ Distinctions

Awards:

Dikshit, A.K.

“Excellent Paper Award for Adsorption of O-Cresol using Activated Carbon presented in the International Conference on “Life Science and Technology (ICLST 2012)”, Hong Kong, on January 2012 .

“Excellent Paper Award for Behaviour of Metals in Coal Fly Ash Ponds presented in 2012 3rd International Conference on Environment and Sustainable Development (ICESD2012)”, Hong Kong, January 2012.

Distinctions:

Dikshit, A.K.

Associate Editor, Arabian Journal of Geosciences (Publishers: Springer, Germany)

Member, Editorial Advisory Board, Journal of Environmental Science and Engineering, (Publishers: NEERI, Nagpur, India)

Member, Editorial Board, Journal of Environmental Science and Health, Part A (Publishers: Taylor and Francis Group)

Member, Editorial Board, Journal of Clean Technology and Environmental Policy (Publishers: Springer Verlag)

Garg, A.

Nomination for a short visit to Scotland under INSA-Royal Society, Edinburgh Exchange of Scientists Programme, 2012

Editorial Board Member, American Journal of Engineering and Applied Sciences (AJEAS)

Honorary Work

Sethi, V.

CESE Head Board of Governors, Mumbai Metropolitan Region Environment Improvement Society

Patil, R.S.

Member, Program Advisory Committee in Atmospheric Sciences under SERC. DST. GOI; 2004 till date.

Visitor's Nominee, Garhwal University, Srinagar, Uttarkand, 2009 till date

Reviewed Papers for Environmental Monitoring and Assessment; Journal from Springer (Netherlands)

Reviewer, Project Proposal for CSIR Human Resources Development Group (Sept. 2011)

Reviewer, Project Proposals for PAC – Atmospheric Sciences, DST, GOI.

Reviewer Project Proposal No. 4709 – D “Resuspension Study on Indoor Respirable Particulates due to varying environmental and human activities”. Funding Agency Indo-French Centre for Advanced Research, IFCAR Delhi, Oct. 2011. Proposal by Dr. Radha Goyal (IITD) and Dr. Laurence LE COQ of Ecole des Mines de Nantes, France.

Examiner, Ph.D. Thesis, Pune Univ. by Mr. Krishnakant B. Budhavant, IITM, Pune on “Studies on Precipitation Chemistry at Different Locations of Pune Region” Guide Prof. P.S.P. Rao, 21st Oct., 2011.

Examiner M.Tech. thesis “Size Distribution of Combustion Aerosol for health hazard evaluation” by Shari Mahesh Tiwari (Guide Dr. (Mrs.) G.G. Pandit), BARC, Feb. 2012.

Reviewer for Selection Committee for Chair Professorship at IIT Kanpur, Sept. 2011.

Member, Standing Selection Committee, IGCAR, BARC, Feb. 2012.

Asolekar, S. R.

Member of the quasi-judicial *Supreme Court Authority* entitled “Dahanu Taluka Environmental Protection Authority (DTEPA)” entrusted with conservation of the eco-fragile region of Dahanu Taluka and surroundings constituted by the Honorable Supreme Court of India since its inception (March 1997 to present)

Member of the core team for authoring section of the 12th Five-Year Plan (2012-2017) called “Steering Committee on Environment, Forests and Wildlife” appointed by the Honorable Planning Commission of India under Chairmanship of Dr. K. Kasturirangan (November 2010 to March 2012).

Member of the “Expert Committee” constituted by the Honorable Planning Commission of India to conduct mid-term assessment of the environment-related commitments made in the

11th Five-Year Plan (2007-2012) *vis-à-vis* the ground-truth in the field under the Chairmanship of Dr. K. Kasturirangan (August 2009 to December 2010).

Member of the “Technical Expert Panel (TEP)” for the World Bank aided project entitled: “Capacity Building for Industrial Pollution Management Project (CBIPMP)” constituted by the Ministry of Environment and Forests, Govt. of India, New Delhi (November 2010 to present)

Dikshit, A.K.

Reviewed papers for Journal of Environmental Engineering (ASCE); Bioresource Technology; Journal of Clean Technology and Environmental Policy; Waste Management; Environmental Modelling & Software; Journal of Environmental Engineering Science; Waste Management and Research; Water Science and Technology during April 2011-March 2012.

Delivered talk on *Water Conservation and Management for Industries* at Training Course organised by civil Engineering Department, IIT Bombay on November 25, 2011.

Delivered talk on *Speciation and Transformation of Metals in Coal Fly Ash* in the Workshop on Clean Coal Technologies at IIT Bombay on Dec 7-9, 2011.

Examiner, Ph.D. Thesis of Ms. Papiya Roy, Research Scholar in Environmental Science, Indian School of Mines, Dhanbad, June 2011 (Topic: *Air Quality Assessment and Its Impacts on Social Spectrum in Talcher Coalfield, Orissa*)

Examiner, Ph.D. Thesis of Mr. D.L. Parmar, Research Scholar, Department of Civil Engineering, IIT Delhi, July 2011 (Topic: *Simulation and Multiobjective Optimization for River Water Quality Management*).

Examiner, PhD Thesis of Mr. Vijayakumar M. Devappa, Research Scholar, Department of Civil Engineering, PDA College of Engineering Gulberga, October 2011 (Topic: *GIS and Remote Sensing Based Drought Management in Gulberga District*)

Member, Advisory Committee for Bio-Medical Rules, Govt. of Maharashtra since 2009

Member, Academic Advisory Committee, Nirma University, Ahmedabad since 2010.

Member, Sub-Committee for ‘Development of National Sustainable Habitat Parameters in the field of Storm Water Management’ constituted by the Carbon Credit Cell of the Ministry of Urban Development, Govt. of India since 2010.

Honorary Professor in the School of Civil Engineering, Faculty of Engineering, University of KwaZulu-Natal, Durban, South Africa.

Nominate Invited External Member to the Senate of the NIT Jamshedpur (Jharkhand).

Nominated Invitee Member on the Academic Board of the Government College of Engineering, Amravati (Maharashtra).

Mukherji, S.

Reviewed paper for International Conference, “International Conference on Metallurgical Coatings and Thin Films (ICMCTF)”, March, 2012.

Reviewed paper for International Journal, “Bulletin of Environmental Contamination and Toxicology”, March, 2012.

Reviewed paper for International Journal, “International Biodeterioration & Biodegradation”, March, 2012.

Reviewed paper for International Journal, “3Biotech”, December, 2011.

Reviewed paper for International Journal, “Polish Journal of Environmental Studies”, October, 2011.

Reviewed paper for International Journal, “Journal of Hazardous Material”, August, 2011.

Reviewed paper for International Journal, “Journal of Hazardous Material”, June, 2011.

Associate Editor for International Journal, “Applied Nanoscience”,

Garg, A.

Reviewed paper for Journal of Industrial Ecology, April 2011

Reviewed paper for Environmental Engineering and Management Journal, July 2011

Reviewed paper for Environmental Technology, October 2011

Reviewed a project proposal submitted for funding to Knowledge Foundation, Sweden in October 2011.

Reviewed a project proposal submitted for funding to DST, New Delhi in February 2012.

Faculty Members and their Specializations

Virendra Sethi

Professor & Head

Air Pollution Science and Engineering, Aerosol Transport Measurements, Aerosol Characterisation. Satellite Data Assisted Air Quality Management, Biomass Gasification Hot Gas Cleanup, Engineering Education.

Shyam R. Asolekar

Professor

Achieving near-zero emissions and improvement in environmental performance through application of innovative preventive environmental management of an industry or community

Application of preventive environmental management by incorporating waste minimization, cleaner and greener technologies, eco-industrial networking and corporate social

responsibility (Sectors: ship dismantling and recycling yards, ship repairing yards, ports and harbors, individual industry, industrial estates, urban bodies, *etc.*)

Treatment of domestic sewage and industrial wastewaters for pollution control and reuse especially combination of tertiary treatment technologies (advanced solutions) with low cost natural treatment systems (ecological solutions) aimed at reuse of sewage and industrial effluents for:

- a. Rejuvenation of ponds, lakes, rivers and wetlands (natural aquatic environment)
- b. Applications in green buildings, green habitats (urban and built environment)

Assessment of technologies aimed at development of appropriate and rational treatment strategy to achieve a given desirable goal through development and application of *Decision Support Tools* based on “life cycle” approach, minimization of carbon footprint and sustainability criteria

Application of technologies and management strategies for hazardous, solid, and biomedical wastes including decontamination of soils and sediments

Application of remotely sensed data for monitoring and modeling of environmental systems; Environmental planning, policy and law

Anil K. Dikshit

Professor

Water and Wastewater Treatment Technologies; Urban Solid Waste Management; Environmental Systems Modelling and Optimization; Environmental Management and Impact Assessment; GIS Applications for Environment.

Sumathi Suresh

Professor

- Remediation of Chlorinated Organic Compounds (pesticides), Textile Dyes, Heavy Metals using Bimetallic Systems, Immobilized Metals and Zero-valent Metals
- Microbiological Processes for Treatment of Industrial Pollutants (textile dyes, pulp and paper mill wastes, heavy metals, tannery wastes): Elucidation of the Mechanism of Pollutant Removal and Design of Bioreactors
- Microbial Remediation of Metabolites Formed from Chemical and Biological Treatment of Chlorinated Pesticides in Soil and Water
- Application of Biological Processes (whole cell and enzyme based) for Developing Cleaner Technologies (for example pulp biobleaching using microbial xylanases and ligninases)
- Microbial Toxicity Testing Assays for Biomonitoring Pollutants and Industrial Wastewaters
- Enzyme Catalyzed Bioremediation Reactions (Characterization of active site, inhibition of enzyme activity, structure-function relationship in enzyme catalysis)

Sanjeev Chaudhari

Professor

- Arsenic removal from water
- Biological nutrient removal from wastewater
- Application of Natural coagulants for water and Wastewater treatment
- Treatment of textile wastewater by biological and physicochemical processes

Suparna Mukherji

Professor

- Biodegradation and Bioremediation of Complex Organic Pollutants
- Toxicity Evaluation of Complex Mixtures
- Environmental Application of Nanomaterials, Sorption Phenomena, Sampling and Analysis of Bioaerosols

Subhankar Karmakar

Assistant Professor

- Environmental and Water Resources Systems Engineering
- Uncertainty Modeling
- Disaster Risk and Vulnerability Assessment.

Anurag Garg

Asst. Professor

Catalytic wet oxidation; Biological treatment processes for wastewater treatment, Municipal Solid waste characterization and treatment, Energy from solid waste; Decision support modeling for solid waste management.

Rashmi S. Patil

Emeritus Fellow

Air Quality Monitoring, Modelling and Management; Indoor Air Quality and Exposure Assessment; Environmental Impact Assessment.

Rakesh Kumar

Visiting Professor

BARC, Mumbai

Krishnanand Maillacheruvu

Visiting Associate Professor

Associate Professor, Department of Civil Engineering & Construction, Bradley University, Peoria, State of Illinois, U.S.A. during 5th January to 29th June, 2011.

Publications

a) Books

Books (Authored)

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