

Centre for Environmental Science and Engineering

(Annual Report 2015-2016)

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 11 faculty members (10 regular and 1 emeritus) with multi-disciplinary background and diversifying research interests. 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. 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.

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.	: 5

Scholarships: Information is provided in the table given below.

Category	Number of Students Admitted Under Each Programme in 2015		
	<u>M. Tech</u>	<u>Ph.D</u>	<u>M.Sc.-Ph.D.</u>
Institute Teaching Assistance (TA)	19	6	4
External sponsored College Teacher (CT) Industry	-	-	-
Project sponsored (PS)	-	1	-
UGC/CSIR/DBT / QIP/CPHEO fellowship holders	-	0	-

R&D Activities

Four new projects have been awarded in 2015-2016. The details of the projects are given below.

Sponsored Research Projects

Sponsored Research Projects:

New : 4
 Ongoing : 8
 Completed : 4
Faculty Involved : 10

Sr.No.	Project Title	Sponsoring Agency	Project Status
1	Development of Design Options for the Environmentally Sound Management of Hazardous Wastes Generated by Chemical Industries and Ship Recycling Yards in Chittagong, Bangladesh and Gadani/Hub, Pakistan (March – August 2016)	UNEP, Geneva, Switzerland	Ongoing
2	Catalyzing Rural Development and Women Empowerment through Implementing Eco-Centric Technology Aimed at Gainful Recycling of Treated Sewages (Technology development and optimization in IIT	Rajiv Gandhi Science and Technology Commission (RGSTC), Govt.	Ongoing

	Bombay and demonstration of technology at a real-life scale at Mhaswad, District Satara, State of Maharashtra) (2014-2017)	of Maharashtra	
3	Rejuvenation of Powai Lake through implementation of in-situ lake purification (2014-2017)	Municipal Corporation of Greater Mumbai (MCGM)	Ongoing
4	Enhancement of natural water systems and treatment methods for safe and sustainable water supply in India <i>i.e. Saph Pani</i> (2011-2015)	European Commission (EC), Brussels	Completed
5	Preventive technological interventions for improving environmental attributes of ship recycling in Alang <i>i.e. Green Alang Initiative</i> (2010-2015)	Gujarat Maritime Board, Gandhinagar	Completed
6	Development of Household or Community Composting System for Food Waste (MSW) Recycling	Tata Centre for Technology & Design, IIT Bombay	New Project
7	Municipal Solid Waste Characterization and Monitoring of Existing Solid Waste Management Systems in IIT Bombay Campus	Tata Centre for Technology & Design, IIT Bombay	New Project
8	Improvement in biodegradability of cresylic spent caustic waste stream (Generated from petroleum refinery) using catalytic wet oxidation in combination with adsorption process	CSIR, New Delhi	Completed
9	Energy recovery from municipal solid waste using anaerobic digestion and its life cycle analysis	IRCC, IIT Bombay	Ongoing
10	Coping With Climate: Assessing Policies For Climate Change Adoption And Transport Sector Mitigation In Indian Cities (CLIMATRANS)	Research Council Of Norway	Ongoing
11	Treatment of Oily Sludge: Biodegradability Assessment and Effect of Bio-augmentation and Bio-stimulation”	IRCC, IIT Bombay	Ongoing
12	Indoor and outdoor air pollution exposure assessment in urban metropolitan slums	IRCC, IIT Bombay	New Project
13	Air Quality Monitoring and Emission Source Apportionment Studies for Ten Cities in the State of Maharashtra	MPCB, Maharashtra	New Project

14	Emission Inventory and Air Quality Model Development for Industrial City Centres in Maharashtra: Framework for Air quality Management with Resources to Science based Policy and Action Plan for Chandrapur Area, MPCB	MPCB, Maharashtra	Ongoing
15	Development of tool for remote and on the ground environment status for Wani Industrial Region(ESFWIR), Dist. Yavatmal, MPCB	MPCB, Maharashtra	Ongoing
16	Newcastle and Mumbai Partnership on Sustainability and Environment Research (NAMPSE), with Newcastle University	Sponsored by UKIERI	Completed

Consultancy Projects:

A total of on consultancy jobs were undertaken by 8 faculty members.

Sr No.	Project Title	Sponsoring Agency	Project Status (as New, Completed, or Ongoing)
1	Assessment of Environmental Performance and Advice for Enhancing Recyclability of Trade Effluent Through Optimization of Environmental Management systems for Hospira Healthcare India Pvt. Ltd. Dist., Maharashtra	Pfizer Hospira Healthcare India Pvt. Ltd., Aurangabad	Completed
2	Assessment of Environmental Performance and Advice for Improvement of the Environmental Management System for Endurance Technologies Pvt. Ltd. Dist. Aurangabad, Maharashtra	Endurance Technologies Pvt. Ltd., Aurangabad	Completed
3	Life-Cycle Assessment of Used Tyres Aimed at Articulation of Regulations and Guidelines for their Safe Reuse and Disposal	Maharashtra Pollution Control Board, Mumbai	Completed
4	Environmental Stewardship Studies at International Papers, Rajahmundry, Andhra Pradesh	IP Paper (India) Pvt. Ltd., Hyderabad	Ongoing

Sr No.	Project Title	Sponsoring Agency	Project Status (as New, Completed, or Ongoing)
5	Environmental Performance Audit and Study on Emissions from Thermal Oxidizer for Recovery of Platinum Aimed at Waste Minimization	Hindustan Platinum Pvt. Ltd., Pawne, Navi Mumbai	Ongoing
6	Treatability study of Effluent Treatment Plant	Bilt Paper, Ballarpur, Maharashtra	Completed
7	Assessment of effluent discharge from JK Paper Ltd., Unit-CPM and water quality assessment of Ghodanala and river Tapi	J.K. Papers Ltd., Gujarat	Completed
8	Performance assessment of the pilot Common Effluent Treatment Plant (CETP) established for Tarapur Environment Protection Society (TEPS)	Ramky Enviro Engineers Limited,	Ongoing
9	Adequacy study of our established environment management system for the H-acid production plant	Rohan Chemical and Dyes Ind., Gujarat	Completed
10	Evaluation of Road Marking Material	MCGM, Mumbai	Ongoing
11	Study of Efficiency of Control Devices and Stack Smoke Visibility, RCF Mumbai	RCF, Mumbai	Completed
12	Development of a Conceptual Framework for Ensuring Sustainable Environment Infrastructure for Textile Park: Amravati (Nandgaon Peth) and Nandubar,	MIDC, Mumbai	Completed

Patents

Sr. No.	Title of the Patent	Inventors	National / International	Status (as filed/ granted)	Date of patent filed (or granted)
1.	"Method and System for the Remediation of Contaminated Earth from Hazardous Subatances in a Batch-Wise <i>Ex-Situ</i> On-Site Manner" INDIA – Patent Application No. 2475/MUM/2010 (271269) dated 6 th Sep, 2010	Asolekar S. R. and IIT Bombay	National	Granted Patent No. 271269 of 12.02.2016	12 th Feb, 2016
2	“Method and System for the Remediation of Contaminated Earth from Hazardous Substances in a Batch-Wise <i>Ex-Situ</i> On-Site Manner” US application No.13/820,976 dated 03.05.2013 Based on PCT/IN2011/000609	Asolekar S. R. and IIT Bombay	USA	Filed	May 2013
3	“Method and System for the Remediation of Contaminated Earth From Hazardous Substances in a Batch-Wise <i>Ex-Situ</i> On- Site Manner” European Patent Application No. 11 805 621.7	Asolekar S. R. and IIT Bombay	Europe	Filed	May 2013
4	“Method and System for the Remediation of Contaminated Earth From Hazardous Substances in a Batch-Wise <i>Ex-Situ</i> On- Site Manner” Hong Kong Standard Patent Application No. 13112582.4 dated 8 th Nov, 2013 (Based on the European Patent Application No. 11 805 621.7)	Asolekar S. R. and IIT Bombay	Hong Kong	Filed	Nov 2013

Sr. No.	Title of the Patent	Inventors	National / International	Status (as filed/ granted)	Date of patent filed (or granted)
5	"A process for recycling hazardous jarosite waste released from zinc industries in developing non-hazardous building blocks"	Asokan P., Saxena M., Asolekar S. R. and CSIR, New Delhi	National	Filed	Nov 2012
6	"A process for the preparation of granulated non-living biomass of the fungus <i>Rhizopus species</i> for sorption of toxic trace and heavy metal and organic chemicals from effluents"	Asolekar S. R. , Sureshkumar G. K., Shah N. A., Suhasini I. P. and IIT Bombay	National	Granted and active for the current year Patent No. 186573	Jun 2002
7	"A process for sorption of toxic trace and heavy metals and organic chemicals from effluents using granulated non-living biomass of the fungus <i>Rhizopus species</i> "	Asolekar S. R. , Sureshkumar G. K., Shah N. A., Suhasini I. P. and IIT Bombay	National	Granted and active for the current year Patent no 186358	Jun 2002

Extension activities

Asolekar S. R.

A fortnightly op-ed column entitled "Shaharavaran" in the Marathi daily newspaper *Lokasatta* to discuss role of environmental science and technology in shaping laws, policies and interventions on ground to transition to sustainable future in India, published by Indian Express News Service, Mumbai (started on 1st January, 2016).

Garg, A.

Attended a One-day workshop on the development of Guidelines and Decision Support System for Wastewater Treatment Plants on invitation on 6th May 2015 at NITIE, Mumbai

Delivered guest lecture on "Handling, Treatment (Conventional and Advanced) and Disposal of Sludge" in short course entitled "Technological Advancements In Sewage Treatment Including Basic Concepts" organized for MCGM in August 2015.

Delivered a short talk on “Solid Waste Management – Recycling and Recovery Options” in IITB – IU-SPEA Workshop held at IIT Bombay during 5-6 May 2015.

Participated and presented a talk on “Sustainable Wastewater Management in Textile Industry” in a brainstorming session on Textile wastewater management, held in IIT Bombay on 20th June 2015.

Chandel, M.K.

MOOC course: Taught Waste Management module under Train 1000 Teachers' programme (T10KT) under the project 'Empowerment of Students/Teachers,' sponsored by the National Mission on Education through ICT (MHRD, Government of India)

Continuing Education Program (CEP) Design & Implementation of Online Monitoring System for all Cycles of Solid Waste Management on Feb 25-27, 2015 and March 9-11, 2015

Sethi, V.

T10KT – Environmental Studies, 2015

T10KT – Technical Communication, 2015

Columbia University –Workshop for Collaborative Research (Feb 4-5, 2016)

Visit to Morbi for Zero-Discharge Coal Gasifier – Potential deployment by Coal India

Public Health Programme – Visit to meet Faculty from University of Minnesota, 17 Feb 2015

Visitors to the Department

Prof. Chittaranjan Ray, Director and Professor, Nebraska Water Center, Robert B. Daugherty Water for Food Institute. He delivered a talk on "Understanding the Fate of Chemicals in the Environment: Site to Regional Scales" to faculty and students of CESE.

Prof. Sylvia Almedia, Faculty of Education at Monash University, Australia, December2014-January2015. She delivered a talk on "Environmental and Sustainability Education in India" on January 16, 2015.

Prof. Anil Namdeo, Senior Lecturer in Transport and Sustainability, Transport Operations Research Group (TORG), School of Civil Engineering and Geosciences, Newcastle University, on January 21, 2015.

Lord Meyer of Karlsruhe and Delegation on January 23, 2015.

Prof. Shiva Nagedra, Department of Civil Engineering, IIT Madras on January 23, 2015.

Prof. Roma Tauler, Institute of Environmental Assessment and Water Research, IDAEA-CSIC, Barcelona, Spain. He delivered talk on 'Use of Chemometrics for the Environmental

Science and Analytical Research' on 13th February 13, 2015.

Prof. Patrik Klintonberg and **Christer Nyger** from Malardalen University, Sweden on 16th February 2015.

Prof. Sylvia Almedia, Faculty of Education at Monash University, Australia on July 7, 2015.

Mr. Rajiv Ramachandra, Sustaibility Consultant, USA. Delivered talk on "How analysis of publicly available data can help in identifying environmental improvement opportunities for research and implementation" on September 23, 2015.

Mr. Rajiv Ramachandra, Business Manager, NY State Pollution Prevention Institute. Delivered talk on "Case Studies on Pulp and Paper Industries" on October 21, 2015.

Prof. Johanna Poggi Davilla, San Igancio de Loyola University, Peru on November 10-11, 2015.

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

National

Dikshit, A.K.

Delivered "Welcome Address," *Air Quality Forum*, held on January 21, 2015, IIT Bombay.

Presented a paper "Scope of Water Conservation," *IWWA-IITB National Seminar on Water Conservation & Rainwater Harvesting*, held on March 15, 2015, at IIT Bombay.

"Work Done on Environment and Water Technology," *IITB-SPEA-Indiana University Workshop*, held on May 6, 2015, at IIT Bombay.

"Ideas and Work Done on MSW Management," *Directorate of Municipal Authority (DMA) Workshop*, held on July 13, 2015, at IIT Bombay.

"Synthesizing Artificial Soils from Iron and Steel Waste Residues," *JSW Workshop*, held on August 13, 2015, at IIT Bombay..

"Work Done on Environmental Sustainability@IITB," *Product Sustainability Round Table (PSRT2015)*, held on August 20, 2015, at Godrej One, Mumbai.

"Wastewater Management in India: Challenges and Perspectives – A Case Study on Distillery Wastewater Management," *IITB-DAAD Alumni International Seminar*, held on December 25, 2015 at IIT Bombay.

Asolekar, S.R.

Sutar R. S., Kumar D., Kamble K. A., Kumar D., Chaturvedi M. K. M. and **Asolekar S. R.**, Poster presentation and Business pitch on "CW4Reuse for Smart Village and Smart City" in *SIG Environment Global Business Forum*, organized by IIT Bombay Alumni Association held on Oct. 17, 2015, Goa.

Kamble K. A., Sutar R. S., Kumar D. Chaturvedi M. K. M. and **Asolekar S. R.**, Poster presentation and Business pitch on "*In-situ* Rejuvenation of Urban Lakes and Ponds Using Engineered Shallow Constructed Wetlands" in *SIG Environment Global Business Forum*, organized by IIT Bombay Alumni Association held on Oct. 17, 2015, Goa.

Singh R., Hiremath A., Pappu A., Mahindrakar A., and **Asolekar S. R.**, Poster presentation and Business pitch on "Wastes derived Advanced Construction Material" in *SIG Environment Global Business Forum*, organized by IIT Bombay Alumni Association held on Oct. 17, 2015, Goa.

Singh R., Hiremath A., and **Asolekar S. R.**, Poster presentation on "Landfill Mining for RDF and Recovery of Precious Metals" in *SIG Environment Global Business Forum*, organized by IIT Bombay Alumni Association held on Oct. 17, 2015. Goa.

J. M Vivek, Sutar R. S., Chaturvedi M. K, Basu D., and **Asolekar S. R.**, Poster presentation on "Minimization of Micro-pollutants and Pathogens Aimed at Enhancing Recycle & Resue of the Treated Wastewaters and Sewages" in *SIG Environment Global Business Forum*, organized by IIT Bombay Alumni Association held on Oct. 17, 2015, Goa.

J. M. Vivek, Pandey S. K, Joshi R. P., **Asolekar S. R.**, Poster presentation on "Mobile Wastewater Treatment Facility" " in *SIG Environment Global Business Forum*, organized by IIT Bombay Alumni Association held on Oct. 17, 2015. Goa.

Kumar S., Pandey S. K., Sawaikar U., **Asolekar S. R.**, Poster presentation on "Technology for Greening of Ship: Onboard Modular Bilge Water Purification System" " in *SIG Environment Global Business Forum*, organized by IIT Bombay Alumni Association held on Oct. 17, 2015. Goa.

Kumar D., Sutar R. S, Kamble K. A, Joshi R. P, Shah J. and **Asolekar S. R.** Poster presentation and Business pitch on "Plastic Recycling ATM" for a Smart City in *SIG Environment Global Business Forum*, organized by IIT Bombay Alumni Association held on Oct. 17, 2015, Goa.

Pandey S. K., Rao B., and **Asolekar S. R.**, Poster presentation on "Remediation of Beaches, Soils and Sediments" for a Smart City in *SIG Environment Global Business Forum*, organized by IIT Bombay Alumni Association held on Oct. 17th, 2015, Goa.

Sutar R. S., Motghare V. M., Kollur S. C., Parikh Y. and **Asolekar S. R.** (2015). Would the persistence of micropollutants compromise reuse options for the treated wastewater? Presented paper in the National Conference on Environmental Monitoring, Assessment and Pollution Control *i.e.* EMAPCO 2015 organized by the SIES Educational Campus in Nerul, Navi Mumbai during December 10th & 11th, 2015.

Mukherji, S.

Mohapatra, S., Padhye, L.P., and **Mukherji, S.** Presented a paper “Challenges in Quantifying Pharmaceuticals in Wastewater Matrix” *TEQIP Short Term Course cum Workshop on “Emerging Micropollutants in the Environment: Occurrence, Transportation, Monitoring and Treatment”* organized by Chemical Engg. Dept. IIT Guwahati, held during March 2-5, 2015 at Guwahati, India.

Menon G., Datta A., and **Mukherji, S.** Presented a paper “Synthesis and Characterization of Photocatalytic Nanocomposites for Degradation of Endocrine Disrupting Pharmaceuticals in Wastewater Effluents” *TEQIP Short Term Course cum Workshop on “Emerging Micropollutants in the Environment: Occurrence, Transportation, Monitoring and Treatment”* organized by Chemical Engg. Dept. IIT Guwahati, held during March 2-5, 2015 at Guwahati, India. Received Best Paper Award.

Kumar, R., and **Mukherji, S.** Presented a paper “Synthesis and Characterization of Composite Nanomaterials for Removal of Pesticides” *TEQIP Short Term Course cum Workshop on “Emerging Micropollutants in the Environment: Occurrence, Transportation, Monitoring and Treatment”* organized by Chemical Engg. Dept. IIT Guwahati, held during March 2-5, 2015 at Guwahati, India.

Mohapatra, S., Padhye L. P., and **Mukherji, S.** Presented a paper “Solid Phase Extraction and HR-LC–MS/MS Method Development for Determination of Pharmaceutical Compounds in Wastewater” *47th IWWA National Convention*, held during Jan 30- Feb 1, 2015 at Kolkata, India. Paper No. 127.

Phatak, P.S., Garg A., and **Mukherji, S.** Presented a paper “Quantification of Free Ammonia and Nitrogen Loss through Ammonia Stripping in a Sequencing Batch Reactor and its Implications on Simultaneous Nitrification Denitrification” *47th IWWA National Convention*, held during Jan 30- Feb 1, 2015 at Kolkata, India. Paper No. 126.

International

Asolekar, S.R.

Sutar R. S., Motghare V. M., Kollur S. C., Parikh Y. and **Asolekar S. R.** (2016). Significance of addressing persistence of pathogens and micropollutants to enhance reuse of treated sewages in India. Presented paper in International Conference on Waste Management (Recycle 2016) at IIT Guwahati in Guwahati, India.

Singh R., Vivek J. M., Rao B., and **Asolekar S. R.** (2016). Significance of Presence of Asbestos in Construction and Demolition Wastes in India. Presented paper in International Conference on Waste Management (Recycle 2016) at IIT Guwahati in Guwahati, India.

Vivek J. M., Singh R., Sutar R. S., **Asolekar S. R.** (2016). Characterization and Disposal of Ashes from Biomedical Waste Incinerator. Presented paper in International Conference on Waste Management (Recycle 2016) at IIT Guwahati in Guwahati, India.

Sutar, R. S. Dinesh Kumar, Hiremath, A. M. Dheeraj Kumar, Kamble, K. A. and **Asolekar, S. R.** (2015). Minimization of energy consumption in wastewater treatment through incorporation of natural treatment systems. Presented paper in 5th International Conference on Advances in Energy Research Indian Institute of Technology Bombay, Mumbai.

Mukherji, S.

Bharti S., Agnihotri, S., Mukherji S., and **Mukherji, S.** Presented a paper “Biocidal Activity of Silver Nanoparticles Immobilized on Surface Functionalized Glass on Yeast” *International Conference on New Frontiers in Chemical, Energy and Environmental Engineering*, organized by Dept. of Chemical Engineering, National Institute of Technology (NIT) Warangal, held during March 20-21, 2015 at Warangal, India.

Kumar, Y., **Mukherji S.**, and Garg, A. Presented a paper “Degradation of Aniline by Fenton or Fenton-like Process”, *International Conference on New Frontiers in Chemical, Energy and Environmental Engineering*, organized by Dept. of Chemical Engineering, National Institute of Technology (NIT) Warangal, held during March 20-21, 2015 at Warangal, India.

Ghosh, I., and **Mukherji, S.** Presented a paper “Persistence of Pyrene in a Hydrocarbon Mixture: Response of an Efficient and Inefficient Pyrene Degradator and Impact of Tritox-X 100”, *International Conference on Environment and Ecology*, organized by Scientific and Environmental Research Institute, Kolkata, held during March 2-4, 2015 at Kolkata, India.

Mohapatra, S., **Mukherji S.**, and Padhye, L. P. Presented a paper “Occurrence and Fate of Pharmaceuticals in Mumbai’s Wastewater”, *3rd Water Research Conference, Elsevier*, held during Jan 11-14, 2015 at Shenzhen, China.

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

Dikshit, A.K.

Coordinated and chaired IITB-UNESCO Workshop on *Ensuring Water Security in Changing Environmental Scenario for Cluster Countries* sponsored by UNESCO New Delhi, held on November 26-27, 2015, at IIT Bombay. During two days workshop, 25 talks were presented by prominent scientists and engineers and the workshop was attended by over 100 participants from United States, Bangladesh, Nepal, Bhutan, Maldives, Sri Lanka and India.

Coordinated International IITB-SPEA-Indiana University Workshop on *Water and Environmental Management*, held on May 5-6, 2015, at IIT Bombay.

Coordinated and organized *Stakeholders Consultation Meeting* under CLIMTRANS Project, held on July 21, 2015, at IIT Bombay.

Chaired pre-lunch session of the *Workshop on Hazardous and Medical Waste* organised by Goa Chamber of Commerce and Industry on February 19, 2016. He also delivered talk on “Design, Operation and Maintenance of Secure Landfill for Biomedical and Hazardous Wastes”.

Asolekar, S.R.

Asolekar S. R., Chaired and Mentored "The Special Interest Group on *Environment*" in the Global Business Forum, organized by IIT Bombay Alumni Association held during July 16-18, 2015 at Goa.

Asolekar S. R., Chaired "*National Conference on Environmental Monitoring EMAPCO*", organized by Indian Institute of Environmental Management held on December 10, 2015 at Navi Mumbai.

Asolekar S. R., Key note address on the Topic "Zero Liquid Discharge" in the conference organized by Indian Environmental Association held at January 21, 2015 at Mumbai.

Asolekar S. R., Chaired session in Industrial Conference & Exhibition on "*Green Business Options*" for Textile, Chemical & Pharmaceutical Sectors organized by MPCB and Green Chemistry Foundation during March 19-20, 2016 at Mumbai

Garg, A.

Organized one day workshop on "Good for the economy, good for the environment - Tapping the potential of resource-efficient waste management" sponsored by (WasteSmart EU project team) on 4th February 2016 at Indian Institute of Technology, Bombay.

Organized a Brainstorming workshop on "Sanitation and Solid Waste Management" for Directorate of Municipal Administration (DMA), Government of Maharashtra 13th July 2015 (Monday) at Indian Institute of Technology, Bombay. (Also delivered a brief talk on our work in the area of Municipal solid waste management) (As Co-convenor)

Sethi, V.

Cumulus, Mumbai 2-6 December, 2015

In situ treatment options for Wastewater Streams – Training workshop 30 Nov, 2015

Invited Lectures**National****Dikshit, A.K.**

"Civil Engineers Build the Society," University BDT College of Engineering, Davangere, May 4, 2015.

"Environmental Issues on Common Effluent Treatment Plants," held on June 2, 2015, at Rajasthan State Pollution Control Board, Jaipur.

"Introduction to Biomedical Waste Management : Need, Rationale and Current Status ," in the Training of Master Trainers on Biomedical Waste Management Practices at Healthcare Facility, held on June 10, 2015, at UP Health and Welfare Department, Lucknow.

"Overview of Current Regulations & Legal Aspects of Biomedical Waste Management," in the Training of Master Trainers on Biomedical Waste Management Practices at Healthcare Facility, held on June 10, 2015, at UP Health and Welfare Department, Lucknow.

"Introduction to Other Environmental Aspects: Wastewater Management and Electronic Waste Management," in the Training of Master Trainers on Biomedical Waste Management Practices at Healthcare Facility, held on June 11, 2015, at UP Health and Welfare Department, Lucknow.

"Overview of Biomedical Waste Management : Types of Wastes, Segregation and Treatment Options," in the Training of Master Trainers on Biomedical Waste Management Practices at Healthcare Facility, held on June 11, 2015, at UP Health and Welfare Department, Lucknow.

"Basics of Training & Guidance for Conducting Training at Facility," in the Training of Master Trainers on Biomedical waste Management Practices at Healthcare Facility, held on June 11, 2015, at UP Health and Welfare Department, Lucknow.

"(a) Collection and Transfer of Municipal Solid Wastes (b) Biomethanation of Municipal Solid Wastes," in the CEP Course on "Energy Recovery from Municipal Solid Waste: A Potential Method for Waste Diversion from Landfills", held during February 4-6, 2015, at IIT Bombay.

"(a) Introduction to Biomedical Waste Management and Regulatory Framework (b) Assessing Current Situation in Biomedical Waste (c) Design of A Biomedical Waste Management System (d) Operational and Managerial Aspects (e) Slaughter House Waste Management," in the CEP Course on "Addressing Special Focus Areas in SWM (Biomedical/Slaughter House/Hazardous/ E-Waste)", held during February 18-20, 2015, at IIT Bombay.

"(a) Design of MSW Collection System and Transfer Station (b) Waste Processing and Sorting Techniques," in the CEP Course on "Designing and Construction of Transfer Station, Composting Facilities and Processing-cum-Recovery Sites", held during February 23-25, 2015, at IIT Bombay.

"(a) Classification and Coding of MSW and Recycling Guidelines for Industry (b) Importance of Monitoring in Solid Waste Management," in the CEP Course on "Design & Implementation of Online Monitoring System for All Cycles of SWM", held during February 25-27, 2015, at IIT Bombay.

"(a) Design of MSW Collection System and Transfer Station (b) Waste Processing and Sorting Techniques," in the CEP Course on "Designing and Construction of Transfer Station, Composting Facilities and Processing-cum-Recovery Sites", held during March 2-4, 2015, at IIT Bombay.

"(a) Introduction to Biomedical Waste Management and Regulatory Framework (b) Assessing Current Situation in Biomedical Waste (c) Design of A Biomedical Waste Management System (d) Operational and Managerial Aspects (e) Slaughter House Waste and Its Manage," in the CEP Course on "Addressing Special Focus Areas in SWM (Biomedical/Slaughter House/Hazardous/ E-Waste)", held during March 12-14, 2015, at IIT Bombay.

"(a) Introduction to Landfilling and Legal Requirements (b) Selecting Site for A Landfill (c) Landfill Site Investigation and Characterization (d) Planning and Design of A Landfill (e) Construction and Operation of A Landfill," in the CEP Course on "Planning and Design of Scientific Landfill Sites (Including Framework for Management and Safe Closure Technology Options)", held during April 15-17, 2015, at IIT Bombay.

"(a) Introduction to Landfilling and Legal Requirements (b) Selecting Site for A Landfill (c) Landfill Site Investigation and Characterization (d) Planning and Design of A Landfill (e) Construction and Operation of A Landfill," in the CEP Course on "Planning and Design of Scientific Landfill Sites (Including Framework for Management and Safe Closure Technology Options)", held during April 20-22, 2015, at IIT Bombay.

"(a) Introduction to Municipal Wastewater and Its Treatment (b) Preliminary and Primary Treatment of Wastewater (c) Advanced Physico-Chemical Treatment of Wastewater," in the CEP Course on "Technological Advancements in Sewage Treatment including Basic Concepts," held during August 24-26, 2015, at IIT Bombay.

"(a) Design Philosophy for Municipal Wastewater and Design of Coarse Screen (b) Raw Water Pumping Station and Primary Sedimentation Tank (c) Hydraulic Profile-I (d) Hydraulic Profile-II," in the CEP Course on "Design and Construction of Wastewater Treatment Facilities (Including Detailed Facility Design)", held during September 21-23, 2015, at IIT Bombay.

"Introduction and Environmental Profile of Pharmaceutical Industry," in the CEP Course on "Environmental Management of Pharmaceutical Industry", held during October 5-9, 2015, at IIT Bombay.

"Design, Operation and Maintenance of Secure Landfill for Biomedical and Hazardous Wastes", in the *Workshop on Hazardous and Medical Waste* held on February 19, 2016, at Goa Chamber of Commerce and Industry, Goa.

Asolekar, S.R.

Invited as the guest of honor at the 10th Annual Conference entitled *Wetlands for our Future: Sustainable Livelihoods* organized by Paryavaran Dakshata Mandal and University of Mumbai to celebrate the 'World Wetlands Day 2016' at Ramniranjan Jhunjhunwala College, Ghatkopar, Mumbai during Jan 31st and Feb 2nd, 2016. Also, delivered the keynote address on "Catalyzing Rural Development and Women Empowerment through Implementing Eco-Centric Technology Aimed at Gainful Recycling of Treated Sewages using Constructed Wetlands".

Garg, A.

Delivered an Invited talk on 'Characterization and recycling opportunities for demolition waste' in "Waste – Uninterrupted Resource and Encouraging Opportunities" at Institute of Chemical Technology (ICT), Matunga, Mumbai on 27th November 2015.

Mukherji, S.

"Priority Organic Pollutants in the Water Environment, Fate and Emerging Concerns" Bengal Science Lecture, jointly organized by West Bengal Department of Science and Technology and Kalimpong Science Centre, Kalimpong, September 10-11, 2015.

"Potential of Oxidation Reduction Processes for Treating Textile Effluent" Conference on "Textile Wastewater Management" organized by Sweep Enviro Pvt. Ltd., NEERI and CESE IIT Bombay, Mumbai, June 20, 2015.

"Metal/Metal Oxide Nanoparticles: Environmental Applications and Environmental Concerns" In-house Meet of Nanotechnology and Science (IMNano), organized by CRNTS, IIT Bombay, Mumbai, March 21, 2015.

"Fate and transport of micropollutants in the aquatic and subsurface environment" TEQIP Short Term Course on "Emerging Micropollutants in the Environment: Occurrence, Transportation, Monitoring and Treatment" organized by Chemical Engg. Dept, IIT Guwahati, Guwahati, March 2-5, 2015.

"Biotransformation of micropollutants and evaluation of toxicity" TEQIP Short Term Course on "Emerging Micropollutants in the Environment: Occurrence, Transportation, Monitoring and Treatment" organized by Chemical Engg. Dept, IIT Guwahati, Guwahati, March 2-5, 2015.

"Bioaerosol Emissions from MSW Composting Sites" Training programme on "Designing and Construction of Transfer Station, Composting Facilities and Processing cum Recovery Sites" organized by IIT Bombay, Mumbai, Feb 23-25, 2015.

"Biological Treatment of Recalcitrant Organic Pollutants in RBC using Bioaugmentation" Winter School on "Microbial Technology for Wastewater Management" organized by Department of Biotechnology, WBUT, Kolkata, Jan 23-25, 2015.

Karmakar, S.

Invited talk in the Royal Society and DST Scientific Seminar on "Water, Food and Energy Nexus" on *Rationalization of river water quality monitoring network considering seasonal variation of pollution loads*, held on March 2, 2015, IIT Gandhinagar, Gandhinagar.

Invited talk in the Session 3 - Uncertainty modelling and impacts assessment on *Assessing Impacts of Climate Change* held on March 20, 2015 at the Centre for Excellence in Climate Studies, Indian Institute of Technology Bombay, Victor Menezes Convention Centre, IIT Bombay, Powai, Mumbai 400076, India.

Invited talk in the workshop on "Water Security under Global Change" on *Rationalization of Surface Water Quality Monitoring Network* held on April 13, 2015, jointly organised by the Center for Ecology and Hydrology (CEH), Wallingford, UK and the Department of Civil Engineering, Indian Institute of Science, Bangalore, Bangalore, India.

Sethi, V.

Third International Symposium, Green Health-2015

Brainstorming Session on Research Need in Environmental engineering, Hyderabad, February 6, 2015

Indian Science Conference -2015, Mumbai

IICAQM 2016, IIT Madras, 15-16 February 2016

National Conference on Evolving Future of Air Quality of Pune City, GoM, MPCB, NEERI (Feb 6, 2016)

Training Newly Inducted Teachers, VJTI, Mumbai 29 December 2015

UPES Invited Lecture (By Skype), 26 February 2016

Air Pollution Workshop, RIT Kottayam, 10-11 December, 2015

Engineering College, Nanded, TEQUIP Lecture, 17-18 December 2015

Tata Steel, Jamshedpur July 15, 2015

UrbAir India Training Workshop, CDAC, Pune 23 Aug 2015

International

Dikshit, A.K.

“(a) Decolourization of Distillery Wastewater by Fungal Batch Aerobic Bioreactor (FBAR), (b) Distillery Wastewater Treatment using Fungal Sequencing Batch Aerobic Bioreactor (FSBAR), (c) Distillery Wastewater Treatment using Fungal Sequential Membrane Bioreactor (FSMBR)”, held on February 1, 2016, at Malardalen University, Sweden.

“Rationalization of Air Quality Monitoring Network for a City based on Fuzzy Logic and Human Health Risk”, held on February 2, 2016, at Malardalen University, Sweden.

CEP Organized

Dikshit, A.K.

“Addressing Special Focus Areas in SWM (Biomedical/Slaughter House/Hazardous/E-Waste)” sponsored by Municipal Corporation of Greater Mumbai, held during February 18-20, 2015, at IIT Bombay.

“Addressing Special Focus Areas in SWM (Biomedical/Slaughter House/Hazardous/E-Waste)” sponsored by Municipal Corporation of Greater Mumbai, held during March 12-14, 2015, at IIT Bombay.

Planning and Design of Scientific Landfill Sites (Including Framework for Management and Safe Closure Technology Options sponsored by Municipal Corporation of Greater Mumbai, held during April 15-17, 2015, at IIT Bombay.

“Planning and Design of Scientific Landfill Sites (Including Framework for Management and Safe Closure Technology Options)” sponsored by Municipal Corporation of Greater Mumbai, held during April 20-22, 2015, at IIT Bombay.

“Technological Advancements in Sewage Treatment Including Basic Concepts” sponsored by Municipal Corporation of Greater Mumbai, held during August 24-26, 2015, at IIT Bombay.

‘Design and Construction of Wastewater Treatment Facilities (Including Detailed Facility Design)’ sponsored by Municipal Corporation of Greater Mumbai, held during September 21-24, 2015, at IIT Bombay.

‘Environmental Management of Pharmaceutical Industry’ sponsored by Andhra Pradesh Pollution Control Board, held during October 5-9, 2015, at IIT Bombay.

Significant Awards/ Distinctions

Dikshit, A.K.

"Excellent Paper Award for the Paper entitled 'A Facility Location Model for MSW Management Systems under Uncertainty: A Case Study of Nashik City, India' presented in the International Conference on Solid Waste Management (IConSWM 2015), organized by International Society of Waste Management, Air and Water, held on November 25-26, at Bangaluru

Asolekar, S.R.

Received the “Tarabai Dharmadhikari Memorial Award” for valuable active contribution in the field of Environment from the *Shantivan Aashram* (Kushtorog Nirvaran Samitee) on Jan 24th, 2016 at Nere, Taluka Pannel.

Won the “Best Paper Award (Second Rank)” for the paper entitled: “Would the persistence of micro-pollutants compromise reuse options for the treated wastewater?”; authored by Sutar R. S., Motghare V. M., Kollur S. C., Parikh Y. and Asolekar S. R. at the *National Conference on Environmental Monitoring, Assessment and Pollution Control i.e. EMAPCO 2015* organized by the SIES Educational Campus in Nerul, Navi Mumbai during December 10th & 11th, 2015.

Nominated to the 'Editorial Advisory Board' of the *ACS Sustainable Chemistry & Engineering* (a journal published by the American Chemical Society) in Nov 2013. Prof. David T. Allen from the University of Texas at Austin is the 'Editor-in-Chief'. The journal typically includes letters, articles, features, and perspectives (reviews) that address challenges of sustainability in the chemical enterprise and advance principles of green chemistry and green engineering. [The Thomson Reuters IF = 4.64]

Mukherji, S.

Institute Chair Professor in CESE, IIT Bombay, November, 2015.

Honorary Work

Dikshit, A.K.

Invited by Malardalen University, Sweden as examiner for PhD thesis in Energy and Environmental Engineering titled "Microbiological Analysis of Municipal Wastewater Treating Photobioreactors" of Mr. Ivo Krustok, held on January 29, 2016, at the Department of Energy, Building and Environment.

Hosted research visits of Mr. Christian Oklund and Richard Viklund, M.Sc. Students, Malardalen University, Sweden, February 15-March 15, 2016.

President Nominee in Faculty Selection Committee for Environmental Science, Jawaharlal Nehru University, New Delhi.

Principal Technical Advisor for M.P. State Government for Approving their Environment Related Projects on Water, Wastewater and Solid Wastes, December 2015.

Panel of Judge for event ACQUANETTE in Techfest2015, held on 26th December 2015.

Member of Advisory Committee National Seminar on Efficient Use of Electricity in Industrial Applications, To be held January 15-16, 2016, at New Delhi.

Member, Board of Studies Environmental Science Programme, Central University of Gujarat, Gandhinagar.

Chairman, ENVIRON-2015 held on March 21, 2015, at IIT Bombay.

Conference PC Member National Conference on "Waste to Wealth" organized by IPS Academy, Institute of Engineering and Science, Indore.

Reviewer Research project "Cost-effective strengthening solutions to reduce vulnerability of new Colombian building construction typology" for The Cooperation and Development Center (CODEV) at the Ecole Polytechnique Federale Lausanne, Switzerland, June 2015.

Reviewer Research project "Experimental and numerical characterization of the mechanical behavior of Ultra High Performance Fibre--Concrete" for Cooperation and Development Center (CODEV) at the Ecole Polytechnique Federale de Lausanne, Switzerland, June 2015.

Reviewer for a MNRE project, July 2015.

Reviewer for the Journal of Clean Technology and Environmental Policy, Springer, August 2015.

Reviewer for the Journal of Environmental Engineering, ASCE, August 2015.

Given consent to Help Ministry of Railways on Cleanliness of Stations under Swachh Bharat Mission.

Invited to attend Steering Committee Meeting of Tata Centre for Technology and Design, IIT Bombay, held on August 6, 2015 .

Member, Editorial Board Journal of Environmental Science and Engineering (Publishers: IAEM, NEERI, Nagapur).

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 Group).

RPC Member for Ms. Mousami Mukherji, PhD Scholar of School of Management, IIT Bombay.

External Ph.D Thesis Examiner PhD Thesis of Ms. Jyoti Yadav, held in March 2015, at Department of Computer Science, Savitribai Phule Pune University, Pune. (Topic: GA-Fuzzy Inference System for Air Quality Classification)

External Ph.D Thesis Examiner Ms. Meena Soni, Department of Chemical Engineering, Rajiv Gandhi Pradyogiki Vishwavidyalaya, Bhopal, held in December 2015 (Topic: Predictive Modeling and Comparative Studies on Different Methods for Dyes Removal from Wastewater)

Chairman, Doctoral Examination Board for PhD Student, Chemical Engineering Department, IIT Bombay, held in December 2015.

Internal Ph.D Defense Examiner PhD Thesis of Mr. Tuhin Banerji, Centre for Environmental Science and Engineering, IIT Bombay, held in March 2015. (Topic: Removal of Arsenic from Groundwater by Ferrous Ions: Laboratory Studies and Field Implementation).

Chairman Interview Panel for IRCC Project on 30th December 2015.

Selection Committee Member for a IRCC Project on 29th December 2015.

Selection Committee Member for IRCC Project CLIMTRANS on 30th December 2015.

Asolekar, S.R.

The *Member* of “Dahanu Taluka Environmental Protection Authority” constituted by the Honorable Supreme Court of India and entrusted with the conservation and sustainable development of the eco-fragile region of Dahanu Taluka in Thane District (1997 to present).

Served as the Convener of the “Two-member Committee” in the context of order given by the Hon National Green Tribunal, Western Zone in Pune to provide expert opinion by conducting a study “to investigate the potential damage. Due to the proposed cutting of 3,375 trees in the immediate vicinity of the proposed dam project near Kas Plateau (the World Heritage Site) in the light of ecological significance of tree felling” (Nov 23rd, 2015 to Feb 17th, 2016).

Reviewed manuscripts for several international journals

Participated in selection committees, evaluated PhD theses (nationally and internationally), advised various Government of India committees, *etc.*

Garg, A.

Reviewed several Papers submitted to the following journals: Chemical Engineering Journal, Waste Management, Journal of Environmental Chemical Engineering, Clean Technologies and Environmental Policy, Applied Nanoscience

Reviewed two Ph.D. theses and one project proposal

Serving as member of several Expert Committees formed for MSW Management and Sewage sludge management by Municipal Corporations in Maharashtra

Chandel, M.K.

Member of Expert Committee on Municipal Solid Waste (MSW) Processing Facility at Calangute / Saligao in North Goa & Cacora in South Goa” 2015.

Mukherji, S.

Associate Editor, Applied Nanoscience, Springer.

Reviewed papers for Water Science and Technology, June 2015 and October 2015.

Reviewed a paper for Journal of Applied Microbiology, July 2015

Reviewed a paper for Bioremediation Journal, August 2015

Reviewed papers for Environmental Science and Pollution Research, August 2015 and October 2015.

Reviewed a paper for Journal of Aerosol Science, September, 2015.

Reviewed a paper for International Biodeterioration and Biodegradation, September, 2015.

Reviewed a paper for 3Biotech, December, 2015.

Reviewed a paper for Journal of Environmental Management, December, 2015.

Reviewed a PhD. Thesis for Centre for Energy, IIT Guwahati, March, 2015.

Reviewed a PhD. Thesis for Department of Civil Engineering, IIT Madras, May 2015.

Reviewed a PhD. Thesis for The School of Earth and Environment, The University of Western Australia, Crawley, June 2015.

Reviewed a PhD. Thesis for School of Environmental Studies, Jadavpur University, Kolkata, November 2015.

Reviewed a PhD. Thesis for Department of Biotechnology, IIT Kharagpur, July 2015.

Participated in Brainstorming Session of Environmental Engineering, SERB DST, Feb 2015.

Conducted Review of a project funded by BIRAC-DBT, New Delhi, June 2015.

Participated in Round Table Expert Group Meeting on Water and Health, organized by DBT in collaboration with STO/NWO The Netherlands, Nov 2015

Karmakar, S.

Reviewed several papers for Water Resources Research (WRR) – AGU, Climate Dynamics-Springer, Journal of Earth System Science - Springer, Current Science - Indian Academy of Sciences, Journal of Applied Meteorology and Climatology – American Meteorological Society, Journal of Environmental Management – Elsevier, Journal of Flood Risk Management – Wiley, Journal of Hydrologic Engineering – ASCE, Encyclopedia of Natural Hazards (Book Chapter).

Served as an expert in the Regional Workshop on Training Need Assessment and PDS under “National Hydrology Project” at CWPRS, Pune, February 25, 2016 organized under National Hydrology Project, by National Institute of Hydrology, Roorkee under Ministry of Water Resources, Govt. of India.

Sethi, V.

Divisional Commissioner Committee for Ulhas-Waldhuni Restoration, Expert Member

Coordination between IITB, VJTI, Walchand College of Engineering, Sangli and VNIT, Nagpur

Faculty Members and Their Specializations

Anil Kumar Dikshit

Professor

Environment and Water Technologies; Municipal, Biomedical and Industrial Wastes Management; Environmental Impact Assessment, Systems Modelling and Sustainability; GIS Application for Environmental Planning and Management.

Shyam R. Asolekar

Professor

1. Development and modelling of reactors for treatment of domestic sewage and industrial wastewaters for pollution control and reuse
2. 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 lakes (renewal of contaminated water bodies)
 - b. Applications in green buildings, green habitats (renewal of urban environment)
 - c. Development of strategies to minimize carbon footprint of an industry
3. Assessment of technologies aimed at development of appropriate and rational treatment strategy to achieve a given desirable application of reuse of treated effluent (Decision Support Tool based on “life cycle” approach and sustainability criteria)
4. Hazardous, solid, and biomedical wastes management including decontamination of soils and sediments (field assessments, reactor development and modelling)
5. Preventive environmental management and sustainable development incorporating waste minimization, cleaner and greener technologies, eco-industrial networking and corporate social responsibility
6. Application of remotely sensed data for monitoring and modelling of environmental systems; Environmental planning, policy and law

Virendra Sethi

Professor

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

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 & Head

Water and Wastewater Treatment.

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
Assoc. Professor

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

Anurag Garg
Assoc. Professor

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

Munish Kumar Chandel
Asst. Professor

Carbon Capture and Storage, Chemical Looping Combustion, Fluidized bed combustion, Greenhouse Gas Mitigation, Solid Waste Management, Waste to Energy, Water-Energy Nexus

Harish C. Phuleria
Asst. Professor

Aerosols & Air Quality Characterization, Environmental Noise Exposures, Environmental Health

Rashmi S. Patil
Emeritus Fellow

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

Rakesh Kumar
Visiting Professor
NEERI, Mumbai

Publications

Books

Books (Edited)

Dikshit, A.K.

Lectures Notes of CEP Course on *Planning and Design of Scientific Landfill Sites (Including Framework for Management and Safe Closure Technology Options)*. Mumbai: IIT Bombay, 2015.

Lecture Notes of CEP Course on *Addressing Special Focus Areas in SWM (Biomedical/ Slaughter House/Hazardous/E-Waste)*. Mumbai: IIT Bombay, 2015.

Lecture Notes of CEP Course on *Design and Construction of Wastewater Treatment Facilities (Including Detailed Facility Design)*. Mumbai: IIT Bombay, 2015.

Lecture Notes of CEP Course on *Technological Advancements in Sewage Treatment Including Basic Concepts*. Mumbai: IIT Bombay, 2015.

Lecture Notes of CEP Course on *Environmental Management of Pharmaceutical Industry*. Mumbai: IIT Bombay, 2015.

Proceedings of IIT-UNESCO Workshop on Water Security for Water Professionals, Mumbai: IIT Bombay, 2016.

Asolekar, S.R.

Wintgens, T., Nättorp, A., Lakshmanan, E. and **Asolekar, S. R.** (2016). *SaphPani Handbook* entitled; “Natural Water Treatment Systems for Safe and Sustainable Water Supply in the Indian Context” IWA Publishing, London SW1H 0QS, UK.

Arceivala, S. J. and **Asolekar, S. R.** (2016). “Wastewater Treatment for Pollution Control” (3rd Edition, 11th Reprint), McGraw Hill Education (India) Pvt. Ltd., New Delhi.

Chapters in Books

Wintgens, T., Plattner, J., Breitenmoser, L., Lakshmanan, E. **Asolekar, S. R.**, Sandhu, C., and Nättorp, A. (2015). “Introduction to Natural Water Treatment Systems in the Indian Context” Chapter-1 in *SaphPani Handbook* entitled; “Natural water treatment systems for safe and sustainable water supply in the Indian context” IWA Publishing, London SW1H 0QS, UK.

Dinesh Kumar, **Asolekar, S. R.**, and Sharma S. K. (2015). “Constructed wetlands and other natural treatment systems for treatment of sewages and effluents: India status report” Chapter-8 in *SaphPani Handbook* entitled; “Natural water treatment systems for safe and sustainable water supply in the Indian context” IWA Publishing, London SW1H 0QS, UK.

Dinesh Kumar and **Asolekar, S. R.** (2015). “Experiences with laboratory and pilot scale constructed wetlands for treatment of sewages and effluents” Chapter-9 in *SaphPani Handbook* entitled “Natural water treatment systems for safe and sustainable water supply in the Indian context” IWA Publishing, London SW1H 0QS, UK.

Dinesh Kumar, **Asolekar, S. R.**, and Sharma S. K. (2015). “Significance of incorporating constructed wetlands to enhance reuse of treated sewages in India” Chapter-10 in *SaphPani Handbook* entitled “Natural water treatment systems for safe and sustainable water supply in the Indian context” IWA Publishing, London SW1H 0QS, UK.

M. Starkl, P. Amerasinghe, L. Essl, M. Jampani, Dinesh Kumar and **Asolekar S. R.** (2015). “Rapid assessment and SWOT analysis of non-technical aspects of natural wastewater treatment systems” Chapter-17 in *SaphPani Handbook* entitled “Natural water treatment systems for safe and sustainable water supply in the Indian context” IWA Publishing, London SW1H 0QS, UK.

Asolekar, S. R., Gopichandran, R., Hiremath, A. M. and Dinesh Kumar (2015). “Green chemistry and ecological engineering as a framework for sustainable development” in an integrated approach to environmental management (eds D. Sarkar, R. Datta, A. Mukherjee and R. Hannigan), John Wiley & Sons, Inc, Hoboken, NJ, USA. (DOI: 10.1002/9781118744406.ch4)

Gopichandran, R., **Asolekar, S. R.**, Jani, O., Dinesh Kumar and Hiremath, A. M. (2015). “Green energy and climate change” in “An integrated approach to environmental management” (eds D. Sarkar, R. Datta, A. Mukherjee and R. Hannigan), John Wiley & Sons, Inc, Hoboken, NJ, USA. (DOI: 10.1002/9781118744406.ch5)

Chandel, M.K.

Chandel, M., Gurjar, B., Ojha, C., and Surampalli, R. “Modeling and Uncertainty Analysis of Transport and Geological Sequestration of CO₂,” Carbon Capture and Storage: Physical, Chemical, and Biological Methods, Ed. Rao et al. , American Society of Civil Engineers, 2015, pp.475-497

Research Books (Authored)

Dikshit, A.K.

"1st Technical Audit Report on Augmentation of 100 MLD Vasai Virar Water Supply Scheme (Surya Stage 3) Taluka Vasai Dist. Thane". Report submitted to Vasai Virar City Municipal Corporation, Virar, January 2015,

“2nd Technical Audit Report on Augmentation of 100 MLD Vasai Virar Water Supply Scheme (Surya Stage 3) Taluka Vasai Dist. Thane”. Report submitted to Vasai Virar City Municipal Corporation, Virar, March 2015, Edit Delete

“Strengthening of Seven Regional Office Laboratories of CECB: Report 1 on (a) Assessment of Present Status of Labs, (b) Establishment of Desired Level & Standard, (c) Assessment of Present Needs”. Report submitted to Chhattisgarh Environment Conservation Board, Raipur, February 2015.

“Strengthening of Seven Regional Office Laboratories of CECB: Report 2 on Specifications with Respect to Equipment /Instruments / Glassware / Chemicals / Thimble and Filter Papers etc”. Report submitted to Chhattisgarh Environment Conservation Board, Raipur, July 2015.

“3rd Technical Audit Report on Augmentation of 100 MLD Vasai Virar Water Supply Scheme (Surya Stage 3) Taluka Vasai Dist. Thane”. Report submitted to Vasai Virar City Municipal Corporation, Virar, September 2015.

“Technical Audit Report on MBBR based Sewage Treatment Plants at Goregaon and Balegaon”. Report submitted to Maharashtra State Police Housing and Welfare Corporation, Mumbai, October 2015.

“Assessment of Air Pollution Control Measures at High Tech Carbon Ltd.” Report Submitted to Carbon Black Production for SKI Carbon Black (India) Pvt Ltd, December 2015.

“Environmental Audit Report for NRB Bearing Limited”. Report submitted to NRB Bearing Limited, Waluj, Aurangabad, December 2015.

“Environmental Audit Report for Bajaj Auto Limited,” Report submitted to Bajaj Auto Limited, Waluj, Aurangabad, January 2016.

“Technical Report on Stop Gap Arrangements for Municipal Solid Wastes at Uttan Site,” Report Submitted to Mira Bhyandar Municipal Corporation, January 2016.

“Environmental Audit Report for AMRI India Private Limited,” Report submitted to AMRI India Private Limited, Waluj, Aurangabad, March 2016.

“Technical Report on Integrated Solid Waste Management Plan for Uttan Site,” Report Submitted to Mira-Bhayandar Municipal Corporation, March 2016.

“Environmental Audit Report for Finechem Laboratories Private Limited,” Report submitted to Finechem Laboratories Private Limited, Waluj, Aurangabad, January 2016.

Articles in Journals

National

Kumar, A., Dikshit, A.K., Fatima, S., Patil, R.S.

“Application of WRF Model for Vehicular Pollution Modelling Using AERMOD,” *Atmospheric and Climate Sciences*, Vol.5, 2015, pp.57-62.

Sutar R. S., Motghare V. M., Kollur S. C., Parikh Y. and **Asolekar S. R.** (2015). “Would the persistence of micro-pollutants compromise reuse options for the treated wastewater?” *International Journal of Environmental Sciences*, Volume 5, Issue 2. (ISSN 2249- 2127) [I.F. = Not Available]

Jeswani, H., and Mukherji, S. 2015

“Treatment of Biomass Gasifier Wastewater in a Rotating Biological Contactor” *The Indian Journal of Technical Education*, Vol. 38, No. 2, April-June 2015, pp. 1-7.

International

Maji, K.J., Dikshit, A.K., Salunkhe, S.

"Adequacy Assessment of Air Quality Monitoring Stations in Delhi, India using Fuzzy Similarity and Fuzzy c-Mean Clustering," *International Journal of Scientific & Engineering Research*, Vol.6, 2015, pp.576-581.

Yadav, V., Karmakar, S., Dikshit, A.K., Vanjari, S.

"Transfer Stations Siting in India: A Feasibility Demonstration (in the column A Glance at the World)," *Waste Management*, Vol.47, 2015, pp.iii-iv.

Hiremath, A. M., Tilwankar, A. K. and Asolekar, S. R. (2015). Significant Steps in Ship Dismantling Vis-a-vis Wastes Generated in a Cluster of Yards in Alang A Case Study. *Journal of Cleaner Production*, Volume 87, Pages 520-532. [Elsevier Publication; IF 3.84/2015].

Garner, K., Sjöström, H., Hiremath, A.M., Tilwankar, A. K., Kinigalakis, G., Asolekar, S. R. (2015). Development and validation of Three-Step Risk Assessment Method for Ship Recycling Sector. *Safety Science* 76, 175–189 [Elsevier Publication; IF 2.21/2015].

Hiremath, A. M., Raj, R. and Asolekar, S. R. (2015). Minimization of Carbon footprinting of Ship Recycling through Implication of Cleaner Technologies (**revised manuscript under review in *Journal of Cleaner Production***) [Elsevier Publication; IF 3.84/2015].

Hiremath, A. M., Pandey, S. K. and Asolekar, S. R. (2015). Development of Ship-Specific Dismantling Plan to improve Health Safety and Environment in Ship Yards (**revised manuscript under review in *Journal of Cleaner Production***) [Elsevier Publication; IF 3.84/2015].

Dinesh Kumar, Asolekar, S. R. and Sharma, S. K. (2015). Post-treatment and reuse of secondary treated effluents using natural treatment systems: the Indian practices. *Journal of Environmental Monitoring and Assessment*, 187 (10), 1-15. [I.F. = 1.679]

Dinesh Kumar, Asolekar, S. R. and Sharma S. K. (2015). Sewage-fed aquaculture: a sustainable approach for wastewater treatment and reuse. *Journal of Environmental Monitoring and Assessment*, 187:656. [I.F. = 1.679]

Starkl, M, Brunner, N., Amerasinghe, P., Mahesh, J., Dinesh Kumar, Asolekar, S. R., Sonkamble, S., Ahmed, S., Md. Wajihuddin, A., Pratyusha, S. and Sarah (2015). Stakeholder views, financing and policy implications for reuse of wastewater for irrigation: a case from Hyderabad, India. *Water*, 7(1); 300-328. [I.F. = 1.751]

B.R. Yadav and A. Garg.

Catalytic hydrothermal treatment of pulping effluent using a mixture of Cu and Mn metals supported on activated carbon as catalyst. *Environmental Science and Pollution Research*, 2015, DOI 10.1007/s11356-015-5365-y. (Available online)

A. Gupta, and A. Garg.

Utilisation of sewage sludge derived adsorbents for the removal of recalcitrant compounds from wastewater: Mechanistic aspects, isotherms, kinetics and thermodynamics. *Bioresource Technology* 194 (2015) 214-224.

D. K. Singhal and A. Garg.

Environmental appraisal for refuse derived fuel (from MSW generated in Mumbai) utilisation as co-fuel in energy recovery processes: a preliminary assessment. *International Journal of Environment and Waste Management* 15(2)(2015) 186-200.

Bharti S., Agnihotri, S., Mukherji S., and Mukherji, S.

“Effectiveness of Immobilized Silver Nanoparticles in Inactivation of Pathogenic Bacteria” *Journal of Environmental Research and Development*, Vol. 9, No. 3A, Jan-March 2015, pp. 849-856.

Agnihotri, S., Bajaj, G., Mukherji, S., and Mukherji, S.

“Arginine Assisted Immobilization of Silver Nanoparticles on ZnO Nanorods: An Enhanced and Reusable Antibacterial Substrate Without Human Cell Cytotoxicity”, *Nanoscale*, Vol. 7, No. 16, 2015, pp. 7415-7429.

Kargupta, W., Ganesh, A., and Mukherji, S.

“Estimation of Carbon dioxide Sequestration Potential of Microalgae Grown in a Batch Photobioreactor”, *Bioresource Technology*, Vol. 180, March 2015, pp. 370-375.

Jasmine, J., and Mukherji, S.

“Characterization of Oily Sludge from a Refinery and Biodegradability Assessment using Various Hydrocarbon Degrading Strains and Reconstituted Consortia”, *Journal of Environmental Management*, Vol. 149, Feb 2015, pp. 118-125.

Sarat Chandra, T., Mudliar, S. N., Vidyashankar, S., Mukherji, S., Krishnamurthi, K., Sarada R., and Chauhan, V. S.

"Defatted Algal Biomass as a Non-conventional Low- Cost Adsorbent: Surface Characterization and its Adsorption Characteristics by Methylene Blue Based Adsorption" *Bioresource Technology*, Vol. 184, May 2015, pp. 395-404.

Jeswani, H., and Mukherji, S.

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