

Centre for Environmental Science and Engineering (Annual Report 2016-2017)

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 13 faculty members (12 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. The centre is expanding teaching and research activities and has started a 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. A dual degree B. Tech.- M. Tech. programme is to be started from 2018. In addition to the above listed programmes, CESE offers an Institute core course “Environmental Studies: Science and Engineering” to all 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.

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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.	: 18
Ph. D.	: 7

Scholarships: Information is provided in the table given below.

Category	Number of Students Admitted Under Each Programme in 2016		
	<u>M. Tech.</u>	<u>Ph.D.</u>	<u>M.Sc.-Ph.D.</u>
Institute Teaching Assistance (TA)	14	5	5
External sponsored College Teacher (CT) Industry	-	-	-
Project sponsored (PS)	-	-	-
UGC/CSIR/DBT / QIP/CPHEO fellowship holders	1	-	-

R&D Activities

Four new projects have been awarded in 2016-2017. The details of the projects are given below.

Sponsored Research Projects

Sponsored Research Projects:

New : 6
 Ongoing : 9
 Completed : 8
Faculty Involved : 10

Sr. No.	Project Title	Sponsoring Agency	Project Status
1	Capacity Building in Sustainability and Environmental Management (CapSEM)	European Region Action Scheme for the Mobility of University Students (ERASMUS)	Ongoing

Sr. No.	Project Title	Sponsoring Agency	Project Status
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 Bombay and demonstration of technology at a real-life scale at Mhaswad, District Satara, State of Maharashtra)	Rajiv Gandhi Science and Technology Commission (RGSTC), Govt. of Maharashtra	Ongoing
3	Preparation of the <i>Project Document</i> and Articulation of guidance for the implementation of the proposed CHW-TSDF and Articulation of Strategies for Capacity Building of Workers in Chittagong	International Maritime Organization (IMO), London, UK	Completed
4	Planning and Designing the Facility for Environmentally Sound Management of Hazardous Wastes in Chittagong, Bangladesh	United Nations Env Programme (UNEP), Geneva, Switzerland and International Maritime Organization (IMO), London, UK	Completed
5	Practical Approach for Planning and Designing the Facility for Environmentally Sound Management of Hazardous Waste in Gadani-Hub area, Pakistan	United Nations Env Programme (UNEP), Geneva, Switzerland	Completed
6	Advising for identification of potential technologies for the proposed waste-to-energy project for disposal of municipal solid waste at <i>Deonar Dumpsite</i> in Mumbai for the Project of Municipal Corporation of Greater Mumbai	Tata Consulting Engineers Ltd (TCE) Mumbai	Completed
7	Advice for landfill reclamation of legacy wastes at Pirana Dumpsite in Ahmedabad	Ahmedabad Municipal Corporation (AMC), Ahmedabad Urban Development	Completed

Sr. No.	Project Title	Sponsoring Agency	Project Status
		Authority (AUDA) and Confederation of Indian Industries (CII)-Gujarat	
8	Municipal Solid Waste Characterization and Monitoring of Existing Solid Waste Management Systems in IIT Bombay Campus	Tata Centre for Technology & Design, IIT Bombay	Ongoing
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	Sustainable Technology for Removal of Arsenic from drinking water: Principles and performance of Electrocoagulation.	MCDONNELL ACADEMY ,ST. LOUIS, USA.	Ongoing
12	Synergy at Water Interfac : Transforming Arsenic and Fuloride Crisis in India into an Economic Enterprise through Technolgy Innovation	Global Innovation Initiative ,Department of State, U.S.A.	Ongoing
13	Development of Household or Community Composting System for Food Waste (MSW) Recycling	Tata Centre for Technology & Design, IIT Bombay	Ongoing
14	Development of a Combustion System for Energy Recovery from Municipal Solid Waste Derived Fuel	MHRD, New Delhi under IMPRINT scheme	New
15	Design Of An Expert System For Flood Forecasting And Management For The City Of Chennai (as Co-PI)	PSA, Govt. of India	New

Sr. No.	Project Title	Sponsoring Agency	Project Status
16	Coupled Human And Natural Systems Environment (Chanse) For Water Management Under Uncertainty In The Indo-Gangetic Plain (as Co-PI)	Ministry Of Earth Sciences	New
17	Characterization of Grey Water and Development of Cost Effective Systems for Grey Water Recycling”	Tata Centre, IIT Bombay,	New
18	Removal of Micropollutants from Water using TiO ₂ Nanocomposites	DST, New Delhi	New
19	Treatment of Oily Sludge: Biodegradability Assessment and Effect of Bio-augmentation and Bio-stimulation	IRCC, IIT Bombay	Completed
20	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
21	Indoor and outdoor air pollution exposure assessment in urban metropolitan slums	IRCC, IIT Bombay	Ongoing
22	Air Quality Monitoring and Emission Source Apportionment Studies for Ten Cities in the State of Maharashtra	MPCB, Maharashtra	New
23	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	Completed

Consultancy Projects:

A total of 14 consultancy jobs were/are undertaken by 9 faculty members.

Sr No.	Project Title	Sponsoring Agency	Project Status (as New, Completed, or Ongoing)
1	Articulation of the Environmental Performance Objectives and Advice for Achieving Near-zero Liquid Discharge through Suitable Design of ETP at a Powerloom Textile Mega Cluster	Ichalkaranji Powerloom Mega Cluster Ltd, Ichalkaranji, Maharashtra	Ongoing
2	Enhancement of Environmental Performance of PNG-based Hindu Crematoriums for Municipal Corporation of Greater Mumbai	J&J Hotmax Pvt. Ltd., Hyderabad	Completed
3	Environmental Stewardship Studies at International Papers, Rajahmundry, Andhra Pradesh	IP Paper (India) Pvt. Ltd., Hyderabad	Completed
4	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	Completed
5	Assessment of Environmental Performance and Advice for Improvement of the Environmental Management System	Endurance Technologies Pvt. Ltd., Waluj, Aurangabad, Maharashtra	Completed
6	Assessment of Environmental Performance and Advice for Enhancing Recyclability of Trade Effluent through Optimization of Environmental Management Systems	Hospira Healthcare India Pvt. Ltd., Waluj, Aurangabad, Maharashtra	Completed
7	Parli TPS 60 MLD Sewage water reuse project for Parli TPS third party expert opinion for design of pump house & pipeline and proof consultancy for finalizing technical specification	Maharashtra State Power Generation Company Limited	Completed

Sr No.	Project Title	Sponsoring Agency	Project Status (as New, Completed, or Ongoing)
8	Augmentation and technology options for STP at Tapovan, Nashik	National Environmental Engineering Research Institute	Completed
9	Work Order for setting up of wind Augmentation and Air purifying unit on Air pollution control system for traffic junctions and congested roads in Mumbai.	Maharashtra Pollution Control Board	Ongoing
10	Hazardous waste audit by IIT for amendment in qty of haz waste	Zoetis Pharmaceutical Pharmaceuticals Research Private Ltd	Completed
11	Technical Audit Report on Surya II Water Supply Scheme	Environmental Science & Engineering	New
12	Performance assessment of the pilot Common Effluent Treatment Plant (CETP) established for Tarapur Environment Protection Society (TEPS)	Ramky Enviro Engineers Limited,	Completed
13	Evaluation of road marking material: Assessment of environmental factors influencing discoloration of road markings	MCGM, Mumbai	Ongoing
14	Development of tool for remote and on the ground environment status for Wani Industrial Region, Dist. Yavatmal	Maharashtra Pollution Control Board	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 Substances 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

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 (Jan – Dec, 2016).

Garg, A.

Organized In house TEQIP Course on “ENERGY RECOVERY FROM SOLID WASTES” during 30th January 2017 – 2nd February 2017 at RIT, Sangli, Maharashtra. (Co-Coordinator: Prof. Munish Chandel, CESE, IIT Bombay).

Member, Waste Management Facility Monitoring Committee constituted by Municipal Corporation of Greater Mumbai on the direction from Honorable High Court, 2016 – onwards

Member, Expert Committee for MSW management in SMKMC constituted by Sangli Miraj Kupwad Municipal Corporation (SMKMC) on advice from National Green Tribunal (NGT), July 2015 – July 2016

Member, Project Monitoring Review Committee constituted to review project under ‘Green Chemistry’ by the Office of the Principal Scientific Adviser to the Government of India, New Delhi, November 2015 – onwards

Karmakar, S.

QIP and CEP on Impacts of Climate Change, Urbanization and Land-Use-Land-Cover Change on Water Resources, 30 May – 3 June, 2016 at IIT Bombay.

Visitors to the Department

Prof. Ramin Farnood from University of Toronto, Canada on November 24, 2016

Dr. Richard Allan from The James Hutton Institute, Dundee UK, **Dr. Stephen Richard Perry** from Hydro Industries, UK, **Prof. David C Stuckey** from Imperial College London, UK, and **Mr. Martin Shouler** from Environmental services engineering, Arup, UK on November 11, 2016

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

National

Asolekar, S. R., Singh, R, Vivek, J. M. and Parikh, Y. (2017). Common Hazardous Waste Treatment, Storage & Disposal Facility: U.N. Projects in Chittagong, Bangladesh and Karachi, Pakistan. The poster was presented at *National Environmental Conference (NEC) - 2017* organized by CESE IIT Bombay and Maharashtra Pollution Control Board (MPCB), Mumbai, India.

Asolekar, S. R., Singh, R. and Vivek, J. M. (2017). Mining of Municipal Dumpsite at Pirana, Ahmedabad (Case Study). The poster was presented at *National Environmental Conference (NEC) - 2017* organized by CESE IIT Bombay and Maharashtra Pollution Control Board (MPCB), Mumbai, India.

Singh, R., Rao, B. and **Asolekar, S. R.** (2017). Innovative Management of Asbestos Bearing Hazardous Wastes. The poster was presented at *National Environmental Conference (NEC) - 2017* organized by CESE IIT Bombay and Maharashtra Pollution Control Board (MPCB), Mumbai, India.

Sutar, R. S., B. Lekshmi, Singh, A., Kamble, K. A., Kumar, D., Parikh Y. and **Asolekar, S. R.** (2017). Pilot-scale Constructed Wetland on IIT Bombay Campus. The poster was presented at *National Environmental Conference (NEC) - 2017* organized by CESE IIT Bombay and Maharashtra Pollution Control Board (MPCB), Mumbai, India.

Asolekar, S. R., Sutar, R. S., B. Lekshmi, Singh, A., Kamble, K. A., Kumar, D., Parikh Y. and **Asolekar, S. R.** (2017). Catalyzing Rural Development and Women Empowerment through Implementing Eco-centric Technology Aimed at Gainful Recycling of Treated Sewages. The poster was presented at *National Environmental Conference (NEC) - 2017* organized by CESE IIT Bombay and Maharashtra Pollution Control Board (MPCB), Mumbai, India.

Asolekar, S. R., Sutar, R. S., B. Lekshmi, Singh, A., Kamble, K. A., Kumar, D., Parikh Y. and **Asolekar, S. R.** (2017). Shantivan Leprosy Hospital (Case Study): Empowerment of Leprosy Patients through Implementing Eco-centric Technology Aimed at Gainful Recycling of Treated Sewages. The poster was presented at *National Environmental Conference - 2017* organized by CESE IIT Bombay and Maharashtra Pollution Control Board (MPCB), Mumbai, India.

Das, D. Bhandarkar, U. and **Sethi, V.** (2016) Study of Coal Gasification for Potential Applications in Cook Stoves, Indo-German Conference on Sustainability, IIT Madras (27th-28th February, 2016)

Das, D. Bhandarkar, U. and **Sethi, V.** Studies on Development of Coal based Cook Stoves (2015) Third International Conference 'Green Health', Mumbai (20th – 22nd February, 2015)

Sreekanth Bojjagani, Anil Namdeo, Rakesh Kumar, **Virendra Sethi**, Margaret C. Bell, Rashmi S. Patil, (2016), "Comparison of the Influence of Rain on Ambient Particulate Matter in London (UK) and Chandrapur (India)", International Conference Proceeding-Indo-German Conference on Sustainability 2015(IGCS 2015) – Exploring Planetary Boundaries and their Challenges and Opportunities, Page : 248 to 252, February 27-28, 2016, IIT Madras, Chennai.

Sreekanth Bojjagani, Rakesh Kumar, **Virendra Sethi**, (2016), "Field Campaigns to Study the Impact of Local Sources on Ambient Air Quality". International Conference - Indian International Conference on Air Quality Management (IICAQM-2016), Springer Publisher. February 15-16, 2016 at IIT Madras, Chennai.

International

Sutar, R. S., Kumar, D., Kamble, K. A., Singh, A. and **Asolekar, S. R.** (2017). Determination of Overall Microbial Activity in Sewage Treatment Plants using FDA Hydrolysis Assay. Presented paper in International Conference on Water, Energy and Environment (ICWEE 2017) at American University of Sharjah, Sharjah, UAE during 28th February and 2nd March, 2017.

Singh, R., Vivek, J. M., Rao, B. and **Asolekar, S. R.** (2016). Environmental Sound Management of Asbestos Wastes Generated from Industries in India. Presented paper in *6th International conference on Solid Waste Management*, Jadavpur University, Kolkata, West Bengal during 22nd and 26th November, 2016.

Vivek, J. M., Singh, R., Sutar, R. S. and **Asolekar, S. R.** (2016). Hazardous Wastes Management in Ship Recycling Yards in India. Presented paper in *6th International conference on Solid Waste Management*, Jadavpur University, Kolkata, West Bengal during 22nd to 26th November, 2016.

Sutar, R. S., Kumar, D., Kamble, K. A., Kumar, D., Parikh, Y. and **Asolekar, S. R.** (2016). Significance of Constructed Wetlands for Enhancing Reuse of Treated Sewages in Rural India. Presented paper in *6th International conference on Solid Waste Management*, Jadavpur University, Kolkata, West Bengal during 22nd and 26th November, 2016.

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, Assam during Apr 1st and 2nd, 2016.

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, Assam during Apr 1st and 2nd, 2016.

Vivek, J. M., Singh, R., Sutar, R. S. and **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, Assam during Apr 1st and 2nd, 2016.

Garg, A. “Characterisation of refuse derived fuel and its constituents to predict their energy recovery potential.” 9th Asia-Pacific Landfill Symposium (APLAS) organized by The University of Hong Kong during 9 – 11 November 2016. (Full paper; oral presentation by second author) (Also listed in the papers published in proceedings)

Das, D., Kedare, S. B., Bhandarkar, U. and **Sethi, V** (2016), Development of Emission Factors for Coal Cook Stoves Used in India, American Geophysical Union Conference, San Francisco, California, USA. (12-16 December, 2016)

Panchal PB, Patil RS, Kumar R, **Phuleria HC**. Spatial distribution of size segregated particulate matter in slums situated near heavily travelled traffic roads in Mumbai, India. *10th International Conference on Air Quality- Science and Application*, Milan, Italy, 14 – 18 March, 2016

Trehan L, **Phuleria HC**, Patil RS, Namdeo A. Air Pollution, Health and Social Deprivation Assessment in Mumbai. *10th International Conference on Air Quality- Science and Application*, Milan, Italy, 14 – 18 March, 2016

Garg M, **Phuleria HC**, Venkataraman C. Quantification and characterization of emissions from open-field agricultural residue burning in Maharashtra. *10th International Conference on Air Quality- Science and Application* Milan, Italy, 14 – 18 March, 2016

Anand A, **Phuleria HC**. Outdoor PM_{2.5} and black carbon exposure assessment in urban slums in India. *17th IUAPPA World Clean Air Congress and 9th CAA Better Air Quality Conference*, Busan, South Korea, 29 Aug- 2 Sep, 2016

Anand A, Lohe S, Varghese D, **Phuleria HC**. Air pollution exposure assessment in Mumbai slums. *17th IUAPPA World Clean Air Congress and 9th CAA Better Air Quality Conference*, Busan, South Korea, 29 Aug- 2 Sep, 2016

Sharma N, Davuluri S, **Phuleria HC**. Indoor air pollution exposure and health issues among women in rural areas of Maharashtra, India. *28th Annual Conference of International Society for Environmental Epidemiology*, Rome, Italy, 1-4 Sep, 2016

Davuluri S. Garg M, Venkataraman C, **Phuleria HC**. Carbonaceous aerosol emissions from biomass burning cookstoves in Western India, *22nd European Aerosol Conference*, Tours, France, 4-9 Sep, 2016

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

Asolekar, S.R.

Asolekar, S. R. Key note address on the Topic "Zero Liquid Discharge" in the conference organized by Indian Environmental Association during Jan 22nd and 23rd, 2016 at Mumbai, Maharashtra.

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 at Mumbai Maharashtra during Mar 19th and 20th, 2016.

Asolekar, S. R. Co-ordinated "Water Management at Local Level" Module under Capacity Development Program in Environment Management organized by K J Somaiya College of Science and Commerce, Vidyavihar, Mumbai 400077 in Collaboration with Mumbai Metropolitan Region-Environment Improvement Society (MMR-EIS) during 28th November and 2nd December, 2016.

Garg, A.

Lead Discussant in session 2 (theme: Experiences and Challenges in Alternative Approaches to Sewage Management) at 11:00 am – 12:00 pm in "Workshop on Scope of Mainstreaming Alternative Approaches to Sewage Management" organized by CTARA, IIT Bombay in VMCC, IIT Bombay on 27th July 2016.

Sethi, V.

Convener, National Environmental Conference, Jan 19-21, 2017

Invited Lectures

National

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".

Invited to deliver Ahmedabad case study *Geo-Enviro Chicago* in Aug 2016

Invited to chair a session in 51st All India Marathi Vidnyan Parishad Adhiveshan organized by Marathi Vidnyan Parishad, Thane Vibhag, Mumbai during 16th to 19th Dec, 2016.

Invited as a keynote speaker in XIII Triennial National Conference of Indian Women Scientists' Association (IWSA)- Sustainable development in India: Role of Science and Technology during 2nd Dec, 2016.

Sutar R. S. and **Asolekar, S. R.** Invited to deliver lectures on Sewage Treatment Technologies, Industrial Wastewater Treatment Technologies and Natural Treatment

Technologies for “Water Management at Local Level” Module under Capacity Development Program in Environment Management organized by K J Somaiya College of Science and Commerce, Vidyavihar, Mumbai 400077 in Collaboration with Mumbai Metropolitan Region-Environment Improvement Society (MMR-EIS) during 28th November and 2nd December, 2016.

Sutar R. S. and **Asolekar, S. R.** Invited to deliver a lecture on “How to Combine Treatment Technologies to Favour Reuse of Treated Effluents?” at short term training programme (STTP) on “Treatment of Waste: Issues, Challenges and Problem Solving” at Department of Civil Engineering, College of Engineering Pune during 27th and 31st March, 2017.

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.

“Existing Solid Waste Problem in Maharashtra & Current status, Limitations/ Constraints & Issues,” Conference on “Pathway Towards Formulation of Science Based Environment Policy for State of Maharashtra” organized in World Trade Centre by MPCB during April 20-21, 2016.

“Technological Intervention in Waste Management,” The Waste Management Conclave, Vikroli Organized by Godrej & Boyce Mfg. Co. Ltd. on May 9, 2016.

“Removal of Recalcitrant Pollutants from Water/ Wastewater,” TEQIP II sponsored short term course on “Advanced Technologies for Water and Wastewater Treatment” organized by Indian Institute of Engineering Science and Technology, Shibpur in May 27, 2016.

“Advanced Technologies for the Removal of Persistent Organics from Wastewater,” Seminar on “Effluent Treatment and Processing” (TEQIP-II sponsored workshop) organized by Institute of Chemical Technology, Mumbai on September 14, 2016.

“Wastewater Treatment and Recycling,” a Workshop on “Advanced Technologies/ Options for Waste Management” organized by National Institute of Technology Surathkal, Mangalore on 8th October 2016.

“Municipal Solid Waste Management,” Seminar on “Latest Trends in Environmental Engineering and Water Resource Technologies” organized by Department of Civil Engineering, Mukesh Patel School of Technology Management & Engineering (MPSTME), Mumbai on 23rd December 2016.

Karmakar, S.

"Uncertainty Modeling and Risk Analysis of Environmental and Hydro-climatic Systems", Keynote lecture in the 5th National Conference on "Role of Engineers in Nation Building" (NCRENB 2017), VIVA Inst. of Tech, Virar, India, 3-4 March 2017

Mukherji, S.

“Potential of Silver Nanoparticle Immobilized Glass Surfaces for Disinfection of Water”, Joint Workshop of IIT Bombay, University of Alberta & IC Impacts, 25th November, 2016.

Phuleria, H.C.

“Health effects of air pollution, emission characterization and exposure assessment”
Workshop on “Noise and & Air Pollution: Challenges and Opportunities’ during 24-25
October, 2016 at NIT Surat, Surat, India.

Shriwastav, A.

Advanced Integrated Wastewater Pond System. Short-Term Training Programme on Recent
Advances in Waste Management at NIT Surat. January 26, 2017. Surat, India.

International**Karmakar, S.**

"Uncertainty Modeling and Human Health Risk Assessment: A Case Study of Municipal
Solid Waste Management," Quantitative Sustainability Assessment (QSA) Division, DTU
Management Engineering, Technical University of Denmark (DTU), 22 June 2016.

CEP Organized**Significant Awards/ Distinctions****Dikshit, A.K.**

Prof Dikshit was awarded Faculty Secondment to Asian Institute of Technology Thailand
by MHRD, Govt of India to teach the course on "Environmental Science and Technology
for Decision Makers" in the Urban Environmental Management Programme from Jan-May
2017.

Honorary Work**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, Central Pollution Control Board, State Pollution Control Boards, *etc.*

Garg, A.

Evaluated and External Examiner for two Ph.D. theses submitted in Chemical Engineering Department, IIT Roorkee (*Date of viva-voce examination: 8th April, 2016*) and School of Environmental Sciences, JNU, New Delhi (*Date of viva-voce examination: 14th February, 2017*).

Reviewed papers submitted to Journal of Chemical Technology and Biotechnology, Journal of the Taiwan Institute of Chemical Engineers, and Indian Journal of Chemistry, Section – A.

Evaluated nine proposals on “Waste management” submitted to Confederation of Indian Industry (CII) in August 2016.

Karmakar, S.

External Ph.D Thesis Examiner Thesis titled as "Study of Uncertainty / Error Propagation during heterogeneous data integration" from JNTU in March 2016.

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

- Development and modelling of reactors for treatment of domestic sewage and industrial wastewaters for pollution control and reuse
- Combination of tertiary treatment technologies (advanced solutions) with low cost natural treatment systems (ecological solutions) aimed at reuse of sewage and industrial effluents for:
 - Rejuvenation of lakes (renewal of contaminated water bodies)
 - Applications in green buildings, green habitats (renewal of urban environment)
 - Development of strategies to minimize carbon footprint of an industry
- 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)
- Hazardous, solid, and biomedical wastes management including decontamination of soils and sediments (field assessments, reactor development and modelling)

- Preventive environmental management and sustainable development incorporating waste minimization, cleaner and greener technologies, eco-industrial networking and corporate social responsibility
- 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

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

Assoc. Professor

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

Anurag Garg**Assoc. Professor**

Municipal solid waste treatment by composting; energy from waste; hydrothermal treatment of sludge and municipal solid waste; Industrial wastewater treatment by catalytic wet oxidation and advanced wastewater treatment methods

Munish Kumar Chandel**Assoc. 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

Amritanshu Shrivastav**Asst. Professor**

Ecology of microorganisms, Water and wastewater treatment, Algal bio-refinery for biofuel production, Algal-bacterial photo-bioreactors, Remediation of heavy metal contamination

Seetha N.**Asst. Professor**

Contaminant movement in porous media, fate and transport of colloids in porous media, pore-scale modeling, upscaling of transport processes from pore scale to Darcy scale, surface water quality modeling.

Rashmi S. Patil**Emeritus Fellow**

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

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