

# *The Academic Vitae*



***Dr. R. SARAVANANE, M.E. , Ph.D.***  
***ASSOCIATE PROFESSOR***  
***ENVIRONMENTAL ENGINEERING***  
***CIVIL ENGINEERING DEPARTMENT***  
***PONDICHERRY ENGINEERING COLLEGE***  
***PUDUCHERRY - 605 014, INDIA***

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## **Brief CV**

**Dr. R. SARAVANANE**

Associate Professor  
Environmental Engineering  
Civil Engineering Department  
Pondicherry Engineering College  
[www.rsaravanane.com](http://www.rsaravanane.com) (or) [www.civil.pec.edu](http://www.civil.pec.edu)

Qualification : B.E., M.E., Ph.D.

Area of Specialization : **Environmental Engineering**

Experience : **Teaching and R & D:** 16 Years  
**Field/ Industry** : 12 years

**Publications** : **Text Book :** **One (Published)**

<b>Research Papers</b>	<b>Natl.</b>	<b>Intl.</b>
<b>Journals</b>	12	24
<b>Proceedings</b>	15	68
<b>Total:</b>	<b>119</b>	

**International Conference Organised** : **One**

**International Workshop Organized** : **One**

**Projects: Research and field (Field/ Sponsored)** : Completed: **20**  
Ongoing : **Four**

**Ph.D Guidance** : **On-going : 5**

**M.Tech Guidance** : **44 (Completed)**

**Research Areas of Interest** : (i) Biohydrogen production through Dark fermentation  
(ii) Biological Fluidization for Wastewater Treatment (**Recalcitrant and Pharmaceutical**)  
(iii) Membrane Bioreactor for Wastewater Treatment (**Recalcitrant and Pharmaceutical**)

- (iii) Hazardous waste treatment and remediation of waste disposal sites
- (iv) Decentralised Wastewater Treatment System (DEWATS)

**Field Work Experience**  
(Design and Monitoring)

: STP, ETP, DEWATS, RO, DM, Industrial Air pollution Control, Leachate treatment system, EIA, EMP, ERA, Biogas- methane utility system, Spealised Effluent treatment system for Pharmaceutical Industry

**Potential Co-ordination Activities**

- Environmental sustainability and management through technological innovation and application in semi-urban and rural areas.
- Solid waste management through integrated reuse and energy utilization
- Municipal and industrial waste to Energy conversion Routes
- Decentralised Wastewater Treatment System (DEWATS)
- Bioremediation of waste disposal sites
- Disaster management in coastal areas
- Environmental Impact Assessment and risk management through state level Co-ordination – Member, State Environmental Impact Assessment Authority (SEIAA), MoEF, Department of Science and Technology & Environment, Government of Puducherry.
- Global warming and climate change mitigation - challenges through education and training
- Water resources augmentation through reuse and artificial recharge

**Dr. R. Saravanane, M.E., Ph.D.**  
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[www.environmental-expert.com/files/0/cv/145494/PECRSCvExpertcom.pdf](http://www.environmental-expert.com/files/0/cv/145494/PECRSCvExpertcom.pdf)

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## **EDUCATION**

**Ph.D., Environmental Engineering, Indian Institute of Technology (IITM), Madras, Chennai., India, April 2003**

**M.E., Environmental Engineering (Distinction), Anna University, Chennai, India, 1993**

**B.E., Civil Engineering (Distinction), University of Madras, Chennai, India, 1989.**

## **RESEARCH**

### **Research Areas of Interest**

#### **Environmental Engineering**

- |  |  |
|--|--|
| Biohydrogen production                           | - Through Dark fermentation<br>( <b>Recalcitrant and Pharmaceutical</b> )                |
| Membrane Bioreactor for Wastewater Treatment     | - ( <b>Recalcitrant and Pharmaceutical</b> )   |
| Biological Fluidization for Wastewater Treatment | - Pharmaceutical Wastewater and Sludge<br>(Biotransformation to Bioenergy Residues)      |
| Hazardous Waste and Sludge Treatment             | - Advanced Oxidation Process (AOP) and<br>Biotransformation to Biosolids Classification, |
| Solid Waste Management                           | - Leachate Treatment<br>(AOP & Biological Process to 3R Routes)                          |
| Environmental Risk Assessment (ERA)              | - <i>Chemical and Explosive Industries</i>   |

## **Geoenvironmental Engineering**

Industrial Effluents – Soil- Pollutant interaction (Physiochemical Behaviour)  
Soil remediation - Recalcitrant Waste Sludge  
(Physiochemical Behaviour - Remedial Assessment  
of Waste Dumping Sites)

## **WORK EXPERIENCE**

### **Professional**

- **Assistant Professor (Present Position)**

Dept. of Civil Engineering, Pondicherry Engineering College, Puducherry, India  
(from July 2003).

- **Senior Lecturer**

Department of Civil Engineering, Pondicherry Engineering College, Puducherry,  
India (October 1998 to July 2003).

- **Lecturer**

Department of Civil Engineering, Pondicherry Engineering College, Puducherry,  
India (October 1993 to October 1998).

### **Industrial**

<b>Organisation</b>	<b>Period</b>	<b>Position</b>	<b>Nature of work</b>
<b>M/s Auroservice D' Auroville Trust, Pondicherry India</b>	20 Feb. 1989 to 10 Dec. 1990	Civil Engineer (Public Health)	☞ Preparation of Tender documents, Bill of quantities, Evaluation of tenders, etc., for VIZAG Steel Plant Township, Vizag, India ☞ Design and bill of quantities for Water Supply Distribution System, Water Treatment Plant, Vizag, India

### **Industrial R & D and Consultancy**

### **Research and Development ( From year 1993 to till date)**

- Water quality tests for potability and for building construction purposes
- Wastewater and industrial effluents characterization and treatability assessment
- Lime samples and admixtures testing for construction purpose.
- Testing and characterization of Hazardous waste sludge as per US EPA norms
- Environmental Impact Assessment (EIA) for Industrial zone in Pondicherry Region, India
- Design and Monitoring of STP, ETP, DEWATS, RO, DM, Industrial Air Pollution Control, Leachate treatment system
- Design and details of Sewer Network system – Urban areas- Puducherry, India
- Suggested modernization scheme of existing effluent treatment Plant for Anglo French Textile mills, Puducherry, India
- In plant Modifications and Performance Evaluation for Sago and starch based factories, salem, southern region, India
- Implemented Rain Water Harvesting Scheme for Hindustan Lever Limited, Puducherry, India
- Conducted Environmental Risk Assessment (ERA) on the Chemical and Explosive handling plants, Puducherry, India
- Performance Evaluation of ETP and Solid waste mycelia , Pharmaceutical Division, Cuddalore

### **Service to the Institute (PEC)**

- Member Founder - Pondicherry Engineering College Alumni Association (PECAA), 1991 – 1998, PEC, Puducherry
- Member – Training and Placement Cell, Pondicherry Engineering College
- Environmental Management - PEC Campus
- Environmental Awareness and Energy Conservation- PEC Campus
- Root Zone Technique for Sewage Treatment and Management – PEC Campus
- Integrated Solid Waste Management

## **TEACHING**

### **Under Graduate/ Post Graduate and Research**

- Wastewater Engineering and Reuse
- Water Supply and Disinfection
- Industrial Effluent Treatment
- Solid waste Management
- Hazardous Waste Treatment and Disposal
- Unit Operations - Water Production and Wastewater Engineering
- Environmental Microbiology
- Environmental systems Engineering
- Air Pollution and Control
- Air and Water Quality Modelling
- Design of Water and Wastewater Treatment Systems
- Environmental Impact Assessment
- Environmental Risk Assessment
- Environmental Management
- Environmental Auditing
- Life Cycle Assessment (LCA) and OH& S

### **LAB / FIELD TESTING**

- ◆ Environmental Engineering Lab
- ◆ Environmental Microbiology Lab
- ◆ Process Operations and Control
- ◆ Biological Fluidization – Aerobic and Anaerobic Biotransformation Routes
- ◆ Sludge Characterisation and Biosolids Classifications (US EPA)
- ◆ Leachate Characterization – Field Validation to Volatile Solids enriched Hazardous Waste Dumping Sites (TCLP, US EPA)
  
- ◆ Biotransformation Routes to Bioenergy residues
- ◆ Experimental and Field Testing – Conductivity based Biosensors
- ◆ Biogas – Flow rate Sensor for Low Velocity Measurement
- ◆ Methane to Market - Partnership and Commercial Viability
- ◆ Disinfection – Electrical Pulse Technology
- ◆ Disinfection – In-situ ClO<sub>2</sub> and Feasibility to Municipal Sectors

## RESEARCH GUIDANCE

### Ph.D. (In Progress)

- ❖ **S. Sundararaman** – Pretreatment and Biotransformation pathway for Antibiotic Based Pharmaceutical Industrial Effluent in a Membrane Bioreactor (completed)
- ❖ **K. Nagakarthigan** - Influence of Acid and Recalcitrant Waste Sludge on the Physiochemical Behaviour and the Remedial Assessment of Waste Dumping Sites
- ❖ **S. Jayakumar** – Assessment and Evaluation of Environmental Effects through Microbiologically Induced Corrosion (MIC) on Structural Components (completed)
- ❖ **S. Balasubramanian** - Development of On-line Instrumentation Module for Performance Evaluation of Water and Wastewater Treatment Plants
- ❖ **B. Radjaram** - Integrated Bioenergy Routes for Production of Alternative Biofuels from Domestic and Industrial waste residues

### M. Tech ( Environmental Engineering )

*(Degree Awarded) - (1997 - Till date)*

#### Year 1997

**Seshadri Sekhar** - Performance evaluation of Anglo textile Effluent Treatment Plant

**B. Radjaram** – Integrated Biomethanation of sugar mill waste and Municipal Sewage

#### Year 1998

**G. Vijayakumar** – Municipal solid waste flyash in concrete utilization

### Year 2002

**R. Kalpana** – Effect of Surfactant effluent on Characterization of Clayey and Silty soils  
(**Best Thesis Award, 2002**)

**G. Savitha** - Characterisation and behaviour of Pharmaceutical effluent on Clayey soil

**M. Saravanan** – Effect of amino acid effluent on the physiochemical behavior of cohesive soils

### Year 2003

**Bhavana Chander Das** – Effect of pharmaceutical effluent on characterization of Commercial and natural soils (**Best Thesis Award, 2003**)

**R. Keerthi** – Characterization and soil-pollutant interaction of surfactant effluent contaminated soil

### Year 2004

**S. Sundararaman** – Effect of Inoculum-substrate ratio on the acclimatization and startup of anaerobic reactor

### Year 2005

**M. Lavanya** – Anaerobic Treatment of high strength industrial effluent in a two stage UASB reactor ( **Best Thesis Award, 2005**)

**Sri B. Muruganandam** – Characterization and enhanced biodegradation of pharmaceutical sludge with biomass based biosensor measurement

**AR. Genesh** – Studies on volatile solids destruction and nutrient removal from municipal secondary sludge

**Manda Chitti Babu** – Co-digestion and reuse of municipal and industrial solid waste

**V. Puviarasan** – Environmental Impact Assessment of an Industrial zone in Pondicherry Region

**A. Anbazhagan** - Estimation of Emission Factors for Indian Vehicles (Coordination with **NEERI**, Chennai, India)

**E. Suresh Pandian** – On-line Measurement and Emission Characterisation for Indian vehicles (Coordination with **NEERI**, Chennai, India)

**G. Mirudhula** – Line source Pollution model – Performance and comparison  
(Coordination with **NEERI**, Chennai, India)

**K. Theepaithan** – Root zone Technique for reuse of municipal sewage

**Year 2006**

**R. Vasanth Priya** – Anaerobic Treatment of High strength Industrial effluent in Hybrid and UASB Reactors (**Best Thesis Award, 2006**)

**Rajesh@Nithyanandam, R.** – Advanced Oxidation for the Treatment and reuse of Recalcitrant Sludge

**G. Aruna Kuzhali** – Studies on Biological Treatment and reuse of Recalcitrant Sludge

**R. Karthick** – Disinfection of Drinking water and Municipal sewage using Chlorine dioxide

**M. Govindaraj** – Design and Optimization of Sewer network for an urban area

**K. Prabhat** – Ambient Air quality status and Pollution Control by Green belt Development (with coordination of **NLC Neyveli, Tamilnadu, India**)

**K. Bharathi Raja** – Pretreatment and technical alternatives for Desalination

**S. Madivanan** – Studies on root zone technique for reuse of municipal sewage

**Sri Bala Gottumukkala** – Evaluation of integrated energy Conversion Processes for Solid waste management

**Year 2007**

**A. Umamaheswari** – Treatment of Municipal sewage in a Moving bed Biofilm Reactor (**Best Thesis Award, 2007**)

**P. Anandhi** – Biochemical stabilization of linear alkyl benzene sulphonate (LABS) based detergent wastewater

**R. Ravikumar** – Characteristic assessment and treatment of municipal solid waste leachate

**T. Kaviarasi** – Anaerobic treatment of recalcitrant pharmaceutical intermediate waste sludge in a hybrid UASB reactor

**K. Stalin** – Studies on Root zone technique for Reuse of Municipal sewage

- A. Hemasuriya**- Treatment of high strength waste water in a hybrid UASB reactor
- P. Sivasankari** – Disinfection of water and waste water using sodium hypochlorite solution
- T. Dhanaselvi** –Environmental Risk assessment of Chemical and explosive industries

**Year 2007 - 08**

- S. Sudalai** – Treatment of Municipal Sewage in an Inverse Anaerobic Fluidized Bed Reactor (**Best Thesis Award, 2007**)
- R. Menaka** - Characteristic Quantification and Fenton Oxidation for Municipal and Hazardous Solid Waste Leachate Treatment
- R. Rajalakshmi** - Acclimatization and Start-up of Fluidized Bed Reactor Treating Anti-biotic Pharmaceutical Effluent
- D. Zealakshmi** - Experimental Analysis of Biotransformation Routes for Surfactants to Bioenergy Residues ( **US EPA and OECD Regulations**)

**Year 2008-2009**

- S. Tamizhvendane** - Recovery of crystalline phosphate from municipal sewage (**Best Thesis Award, 2009**)
- V. Vizhali** - Development of conductometric biosensor for microbial biomass measurement
- D. Catherine** - Environmental Risk Assessment of explosive aromatic industries
- M. Malarviji** - Sludge minimization in Textile industries through innovative physico-chemical methods

**Current Research Work**

- **Hazardous waste treatment and disposal ( Pharmaceutical waste treatment)**
- **Biotransformation of recalcitrant waste sludge**
- **Biological transformation routes for hazardous waste fuel derivatives**
- **Biotransformation routes for Cephalosporin compounds to fuel derivatives**
- **Biofuel derivatives from Detergents and surfactants**

- **Disinfection of water and waste water using Chlorine dioxide (Aquatech, UK) and sodium hypochlorite solution**
- **Environmental Risk Assessment (ERA) of Chemical and Explosive industries**
- **Solid Waste Management – Toxicity Characterization (TCLP), Leachate treatmentability Assessment, Refuse Derived Fuel (RDF) alternatives to plastic waste management .**
- **Pretreatment and Biotransformation pathway - Antibiotic Pharmaceutical Effluent in Membrane Bioreactor (MBR)**
- **DEWATS – Formulation of Guidelines for Planning and Implementation**
- **Physiochemical Behaviour and the Remedial Assessment of Waste Dumping Sites**
- **Microbiologically Induced Corrosion (MIC) on Structural Components**
- **Development of On-line Instrumentation Module for Performance Evaluation of Water and Wastewater Treatment Plants**
- **Experimental and Field Testing – Conductivity based Biosensors**

#### **Current Industry/ Field Work**

- (I) Performance Evaluation of ETP and Solid waste mycelia , Pharmaceutical Division, Cuddalore**
- (II) Environmental Risk Assessment (ERA) of proposed Liquefied Petroleum Gas (LPG) plant, Puducherry, India ( Completed ).**
- (III) Design and Monitoring of STP, ETP, DEWATS, RO, DM, Industrial Air pollution Control, Leachate treatment system, Biogas - Methane Utility System**
- (IV) Online monitoring of Biogas plant using Computer Aided Data Acquisition and Control, Karaikal, Puducherry Region, India (In Progress)**
- (V) In plant Modifications and Performance Evaluation for Sago and Starch based factories, Salem, Southern Region, India (In Progress)**
- (VI) Solid Waste Management - Toxicity Characterization (TCLP), Leachate treatment, Refuse Derived Fuel (RDF) alternatives to plastic waste management , Karaikal, Puducherry Region, India (In Progress)**
- (VII) Root Zone Technique for reuse of secondary municipal sewage and industrial effluent., India**

- (VIII) Sludge Characterisation and Biosolids Classifications (US EPA)**
- (IX) Leachate Characterization – Field Validation to Volatile Solids enriched Hazardous Waste Dumping Sites (TCLP, US EPA)**
- (X) Experimental and Field Testing – Conductivity based Biosensors**
- (XI) Biogas – Flow rate Sensor for Low Velocity Measurement**
- (XII) Disinfection – Electrical Pulse Technology**
- (XIII) Disinfection – In-situ ClO<sub>2</sub> and Feasibility to Municipal Sectors**

#### **RESEARCH COORDINATION/ COLLOBORATIONS**

- ✧ **CORDIS – Research Frame Work, Europe**
- ✧ **Technological Innovation – IRC Network, Europe**
- ✧ **Environmental Expert.com - Case Studies and Industrial Research Data Base, USA**
- ✧ **Solid Waste Management, INDP, France, UK**
- ✧ **Project Network Coordination – Waste to Bioenergy - Methane to Markets, Environmental Protection Agency, US EPA.**
- ✧ **Membrane BioReactor (MBR) – Network, Europe**
- ✧ **Disinfection – Aquatek, UK**
- ✧ **National Environmental Engineering Research Institute (NEERI), Chennai, India**
- ✧ **CPHEEO, Ministry of Urban Development, New Delhi, India**
- ✧ **Growdiesel Consortium (Climate Care Council), New Delhi, India**
- ✧ **Neyveli Lignite Corporation Ltd. (NLC), Tamilnadu, India**
- ✧ **Steel Authority of India Limited, Kolkatta, India**
- ✧ **Department of Science, Technology and Environment (DSTE), Puducherry, India**
- ✧ **Research and Consultancy – CPWD, PWD, Corporate, Public Sectors, Industrial Sectors, Puducherry and within India.**

## AWARDS/ HONOURS

- (1) Received a **Cash Award** For the **best Technical paper** presented in National Seminar on **Clean Environment Strategies, Planning and Management, Feb. 26-27, 1994, Lucknow, India.**
- (2) Biography of the Author is Published in **Marqui's Who'sWho In Science and Engineering** , 8 th edn. 2005 – 2006
- (3) **R.Saravanane**, D.V.S.Murthy and K.Krishnaiah (2000). Bioaugmentation and treatment of cephalixin drug based pharmaceutical effluent in an upflow anaerobic fluidized bed system. **Bioresource Technology**, Vol. 76, No. 3, pp 279 – 281 – **Indexed in Environmental Protection Agency (US EPA) of National Environmental Research Laboratory – Environmental Sciences, PPCB as Environmental pollutants, June 2004.**
- (4) **R.Saravanane**, D.V.S.Murthy and K.Krishnaiah (2000). Bioaugmentation and treatment of cephalixin drug based pharmaceutical effluent in an upflow anaerobic fluidized bed system. **Bioresource Technology**, Vol. 76, No. 3, pp 279 – 281 –**Indexed in Pharm Products Web site, USA (Hair Million) for Research Reference**
- (5) **Saravanane, R., Murthy, D.V.S., and Krishnaiah, K.,** "Bioaugmentation and treatment on antibiotic drug based pharmaceutical effluent in an upflow anaerobic fluidized bed system", Proceedings of Envirovision 2000: Industrial Wastewater Recycle and Reuse, May 5-6, 2000, Mumbai., India (**Best Paper Award**)
- (6) **Honoured in Water Environment Federation (WEF), USA**  
**R. Saravanane** and M. Lavanya (2006), 'Anaerobic Stabilization And Recalcitrant Anti-Biotic Transformation Under Acclimated Inoculum-Substrate Matrix', **Water Environment Federation (WEF)** , USA, **WEFTEC 2006, 21-25, October, Texas, USA (Honoured in Environmental Expert.com, Under Water Environment Federation, WEF, USA) pp. 1739- 1746. (Published)**
- (7) Awarded "**Friend of Energy Award**" for Waste to biomass energy utilization from **National Conference on Demand Side Management Options for Energy Sustainability (DSMES' 07), Energy Society of India, 25 th October, 2007, India.**
- (8) Research Fellowship (2008) (For Academic and Research Collaboration) - Environmental Research (Water and Wastewater Treatment Technologies- **Laboratoire de Chimie et Microbiologie de l'Eau (LCME)** to **Ecole Supérieure d'Ingénieurs de Poitiers (ESIP), University of Poitiers, Poitiers, France, during Sep – October 2008**

## **Research Fellowship**

1. For Academic and Research Collaboration - Environmental Research (Water and Wastewater Treatment Technologies- **Laboratoire de Chimie et Microbiologie de l'Eau (LCME)** to **Ecole Supérieure d'Ingénieurs de Poitiers (ESIP)**, University of Poitiers, Poitiers, France, during Sep – October 2008.
2. Exploring **Engineering and Environmental Issues on feasibility of secondary sewage effluent to offshore algal growth – biofuel and hydrogen energy production, Wind, Sea Algae – Offshore cultivation of algae for biodiesel Production, Lolland, Copenhagen, Denmark (www.algaepedia.org)**

## **ACADEMIC AND RESEARCH COLLABORATION**

1. As Expert in International workshop **Journe'es Information Eaux**, 23 – 25 th Septembre, 2008, ESIP, Poitiers and **Research collaboration** during 20th Sep. to 1st Oct. 2008, at Ecole Supérieure d'Ingénieurs de Poitiers (ESIP), University of Poitiers, Poitiers, France.
2. Expert Technical discussion on **“Engineering and Environmental Issues on feasibility of secondary sewage effluent to offshore algal growth”**, International Workshop on **Wind, Sea Algae – Offshore cultivation of algae for biodiesel Production**, 20 - 22 April 2009, Lolland, Copenhagen, Denmark ([www.algaepedia.org](http://www.algaepedia.org))

## **INTERNATIONAL PROJECTS AND STUDENTS**

### **The Institut National des Sciences Appliquées of Toulouse (INSA), Toulouse, France**

1. Ms. Marmie Gaelle, 4 th year (Engineering Diploma), “Pretreatment and Biotransformation pathway - Antibiotic Pharmaceutical Effluent in Membrane Bioreactor (MBR)”, [Internship], **Laboratoire d'Ingénierie des Procédés de l'Environnement** (Department of Chemical and Environmental Engineering), **The Institut National des Sciences Appliquées of Toulouse (INSA), Toulouse, France. Period: June 22<sup>nd</sup> to 12 th Septembre 2009**, at Environmental Engineering Laboratory, Civil Engineering Department, Pondicherry Engineering College (PEC) , **Pondicherry, India.**
2. **Laboratoire de Chimie et Microbiologie de l'Eau (LCME)** to **Ecole Supérieure d'Ingénieurs de Poitiers (ESIP)**, University of Poitiers, Poitiers, France

## **International Water Association (IWA), UK – Specialist Group**

**Anaerobic Digestion (Management Committee)**– Published in IWA year Book, p. 78, 2009.

## **International Water Association, IWA Conferences, UK**

**Technical Reviewer - IWA World Water Congress and Exhibition**, 19–24 September 2010, Montréal, Canada

**Countries Visited: France, Denmark, Belgium and Asia**

## **Reviewer of International Journals**

1. Waste Management, Elsevier
2. Water Research, Elsevier
3. Environmental Technology, Taylor and Francis
4. Water Science and Technology, IWA
5. Journal of Hazardous Materials, Elsevier
6. Journal of Environmental Engineering, ASCE
7. Environmental Research, Elsevier
8. Environmental Modelling and Software, Elsevier
9. Journal of Membrane Science, Elsevier
10. International Journal of Energy Research, Wiley InterScience
11. International Journal of Hydrogen Energy, Elsevier
12. Biosensor and Bioelectronics, Elsevier
13. Journal of Environmental Management, Elsevier

## **European Commission**

### **1. Europa CORDIS – Expert Profile [FP7 – Research Frame work]**

([http://cordis.europa.eu/fetch?CALLER=EN\\_FP7\\_PARTNERS&ACTION=D&DOC=1&CAT=PART&QUERY=012401726982:b992:2ab41666&RCN=81188](http://cordis.europa.eu/fetch?CALLER=EN_FP7_PARTNERS&ACTION=D&DOC=1&CAT=PART&QUERY=012401726982:b992:2ab41666&RCN=81188))

2. Research Collaboration - **Technological Innovation – IRC Network, Europe**
3. **Member of Risk Assessment** - Advisory Structure of Scientific Committees and Expert set up by European Commission Decision - 2008/721/EC (Published in Official Journal of the European Union, OJ L 49, 20.02.2009, p. 33)  
(<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:049:0033:01:DE:HTML>)
4. Europe – India – Science and Technology Cooperation (Member and Invitee)

## Ministry Environment and Forests (MoEF), Government of India

**Member - Risk Assessment**, The Gazette of India, State Environmental Impact Assessment Authority (SEIAA), MoEF, Department of Science and Technology & Environment, Government of Puducherry

## Professional Affiliations

- Member, **International Water Association (IWA)**, UK
- **IDS – Water**, Europe
- Pharmaceutical Technology – Industry (**SPG, PLC**)
- Project Network Member, Waste to energy, **Methane to Markets**, EPA, USA.
- Member, Indian Environmental Association (**IEA**), Mumbai, India
- Indian Pharmaceutical Association (**IPA**), India
- Member, **Institution of Engineers**, Kolkatta , India,
- Member, National Solid Waste Management Association (**NSWAI**), India
- Member, **Growdiesel Consortium** (Climate Care Council), New Delhi, India
- Member, Indian Water Works Association (**IWWA**), India
- Member, Indian Association for Environmental Management (**IAEM**), NEERI, India
- Member, Institution of Public health Engineers (**IPHE**), Kolkatta, India
  
- Member, Environmental Impact Assessment (EIA) Committee, Ministry of Environment and Forests, (MoEF) - Department of Science, Technology and Environment (DSTE), Puducherry, India
  
- Life Member, Indian Society for Technical Education (**ISTE**), India

## RESEARCH PUBLICATIONS

### BOOKS/ CHAPTERS/PAPER CONTRIBUTIONS

#### Book Published

A Text book titled “ ENVIRONMENTAL SCIENCE AND ENGINEERING” by **Dr.Raman Saravanane, The Select Publication, First Edition, January 2005. (For Anna University and Pondicherry University Syllabi), India**

#### Book-Chapters/Paper Contributions

1. “Bioaugmentation and Treatment of cephalixin drug-based Pharmaceutical effluent in an Upflow Anaerobic Fluidized bed System”, *Biotreatment of Industrial Effluents* – Mukesh Doble and Anil Kumar, p.224, 2005, **Elsevier Pub**, UK, ISBN 0750678380.
2. Bioaugmentation and Anaerobic Treatment of Pharmaceutical Effluent in Fluidized Bed Reactor, *Biology of Wastewater Treatment* - Nick F. Gray, p.1358, 2004, **Imperial College Press**, London, UK, ISBN 1860943322.
3. “Effect of Chemically Modified low cost adsorbents for removal of heavy metals from waste water: A Comparative Study”, *Biotechnological Approaches for Sustainable Development-* Sudhakara Reddy and Sunil Khanna p. 211, 2004, **Allied Pub.**, India, ISBN 8177646699.
4. “Anaerobic treatment of Sago waste water using a Fluidized Bed Reactor”, Chap. 23, *Industry and Environment*, - R.K. Trivedy, New Delhi, India, 540 p., 2002, ISBN 81-7035-268-1.
5. “Anaerobic transformation and bioremediation of cephalixin antibiotic waste sludge using a fluidized bed reactor”, *Hazardous and Industrial Waste: Proceedings of the 33<sup>rd</sup> Mid-Atlantic Industrial and Hazardous Waste Conference* - Nada Assaf- Anid, pp. 298 – 306, 2001, **CRC Press**, USA, ISBN 1587161206.
6. “Environmental Issue and Waste Management in Sago Industry for Energy Production”, *Environmental Issue and Management of Waste in Energy and Mineral Production*, - Raj K. Sigal and Anil K. Mehrotra, Canada, pp. 171- 174, 2000, **Taylor & Francis Pub.**, ISBN 90 5809 085 X.
7. “Inhibition and Assessment of toxicity on anaerobic degradation of Anti-osmotic drug based pharmaceutical effluent in an up-flow anaerobic fluidized bed system”, *Hazardous and Industrial Waste: Proceedings of the 32<sup>nd</sup> Mid-Atlantic Industrial and Hazardous Waste Conference* – James (Chip) Kilduff, Simeon Komisar and Marianne Nyman, pp. 359-369, 2000, **CRC Press**, USA, ISBN 1587160269.

## REFEREED RESEARCH PUBLICATIONS

### I INTERNATIONAL JOURNALS (REFEREED)

1. **R.Saravanane** and D.V.S.Murthy (2000). Application of anaerobic fluidized bed reactors in wastewater treatment: A review. **Environmental Management and Health**, (*Emerald Pub. UK*), Vol. 11, No.2 & 3, 97–117.
2. **R.Saravanane**, D.V.S.Murthy and K.Krishnaiah (2001). Anaerobic fluidized bed degradation and development of a kinetic model for a particulate organic matter enriched wastewater sludge. **Water, Air and Soil Pollution (Kluwer Academic, USA)** , Vol. 127, No. 1/4, pp 15 - 30.
3. **R.Saravanane**, D.V.S.Murthy and K.Krishnaiah (2001). Bioaugmentation and treatment of cephalixin drug based pharmaceutical effluent in an upflow anaerobic fluidized bed system. **Bioresource Technology (Elsevier Pub.)**, Vol. 76, No. 3, pp 279 – 281.
4. **R.Saravanane**, D.V.S.Murthy and K.Krishnaiah (2001). Treatment of anti-osmotic drug based pharmaceutical effluent in an upflow anaerobic fluidized bed system. **Waste Management (Pergamon Pub.)**, Vol. 21, No. 6, pp 563 – 568.
5. **R.Saravanane**, D.V.S.Murthy and K.Krishnaiah (2001). Anaerobic treatment and biogas recovery for sago wastewater management using a fluidized bed reactor. **Water Science and Technology (Elsevier Pub.)**, Vol. 44, No.6, 141-147.
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#### **IV NATIONAL CONFERENCES / SEMINARS (REFEREED)**

1. **R.Saravanane** and P.Selvapathy (1993). Heavy metals removal from wastewater using Water hyacinth. **National Seminar on Clean Environment, Strategies and Planning**, November, pp. 251-260, Lucknow, India. (**Received a Cash Award for the best Paper Presented**).
2. **R.Saravanane**, D.V.S.Murthy and K.Krishnaiah (1999). Anaerobic treatment of sago wastewater using a fluidized bed reactor. **CHEMCON '99**, Dec. 20-23, Chandigarh, India.

3. **R.Saravanane** and D.V.S.Murthy (1999). Treatment of dairy effluent and the effect of micronutrient on the performance of Anaerobic fluidized bed reactor. **Indian Association for Environmental Management (IAEM), Annual Conference**, Dec. 17-18, Nagpur, India.
4. **R.Saravanane**, D.V.S.Murthy and K.Krishnaiah (1999). Studies on Anaerobic treatment of sago wastewater using a fluidized bed reactor. **National Conference on Industry and Environment**, Dec. 28-30, Karad, India.
5. **R. Saravanane**, AR. Ganesh (2005). Nutrient Management in Municipal Secondary Sludge by Chemical Oxidation using Hydrogen Peroxide( $H_2O_2$ ). **National Conference on “Sludge waste and waste water management and treatment Technologies”**, Bharath Institute of Higher Education, Chennai, pp 62-69.
6. **R. Saravanane**, Manda Chitti Babu (2005). Co- Digestion of Municipal Solid Waste with Municipal Sewage and Cattle Slurry. **National Conference on “Sludge waste and waste water management and treatment Technologies”**, March 11, Bharath Institute of Higher Education, Chennai, pp 70-75.
7. **R. Saravanane**, G.Sam Gunasekar, B.Sri Muruganandam(2005). Reclamation and Reuse of Pharmaceutical Waste for Efficient Water Resources Management . **National Conference on “Innovative Techniques for Sustainable Development of Water Resources”**, March 24-25, Annamalai University , Chidambaram.pp 323-330.
8. **R. Saravanane**, V. Puviarasan, M.A. Sivasankaran, S. Sivamoorthy Reddy (2005). Assessment and Evaluation of Environmental Impacts on Augementation of Deplecting Ground Water Resources . **National Conference on “Innovative Techniques for Sustainable Development of Water Resources”**, March 24-25, Annamalai University , Chidambaram. pp 301-308.
15. **R. Saravanane**, M.A. Sivasankaran, M. Lavanya(2005).Innovative high Strength Effluent Recycle and Reuse for Replishment of Surface Water Resources. **National Conference on “Innovative Techniques for Sustainable Development of Water Resources”**, March 24-25, Annamalai University , Chidambaram. pp 258-265.

16. V. Murugaiyan, **R. Saravanane**, T. Sundararajan and V.K. Stalin (2005) Characterization and effect of industrial effluent on Clayey soil. **All India Seminar on Advances in Geotechnical Engineering (AGTE –2005)**, National Institute of Technology, Rourkela, 22 – 23 January 2005, pp. 140 – 146.
17. V. Murugaiyan, **R. Saravanane**, T. Sundararajan and V.K. Stalin (2005) Effect of Industrial effluent on Physio-chemical and properties of fine grained soil. **All India Seminar on Advances in Geotechnical Engineering (AGTE – 2005)**, National Institute of Technology, Rourkela, 22 – 23 January 2005, pp. 157-163.
18. **Raman Saravanane** (2006) 'Water Quality Perspectives on Tsunami Prone Estuarine Systems – A Case Study'. **National Seminar on Disaster Management**. Neyveli Lignite Corporation (NLC) Ltd, Neyveli, India, 15 – 16 July 2006, pp. 183 – 186.
19. B. Radjaram, **R. Saravanane** and V. Murugaiyan (2007). Energy Recovery and Environmental Sustainability on Integrated Renewable Biomass System, *National Conference on Demand Side Management Options for Energy Sustainability (DSMES' 07)*, **Energy Society of India**, Pondicherry, 25 th October, 2007, India., pp. 87-89.
20. S. Balasubramanian and **R. Saravanane** (2008). 'On-line Instrumentation System and Monitoring of Microbiological Quality of Drinking Water for Urban and Rural Communities' *National Conference on Instrumentation Systems Measurement and Automation (CISMA'07)*, 7 – 8 th February, 2008, Pondicherry Engineering College, Puducherry, India, pp. 9- 14.
21. R. Menaka, R. Ravikumar, **R. Saravanane** and Zealakshmi (2008). 'Municipal Solid Waste Management of Puducherry – A Case Study of Leachability of Windrows Composting Yard for Reversibility', *All India Seminar on Solid Waste Management, The Institution of Engineers (India)*, 22 – 23 February, 2008, IIT Madras, Chennai, India, pp.77- 87.
22. R. Saravanane (2009), Special Lecture on “**Eco-friendly algae for Environmental Management**” organised by **Institution of Engineers (India) and Engineers & Scientists Association**, 30 th September 2009, **Neyveli Lignite Corporation Ltd, NLC**, Neyveli, Tamilnadu, India.

## Expert Lecture – Presentations

1. R. Saravanane, **Environmental Risk Assessment and Case study**, Presented for Short-term Course on ‘Environmental Impact Assessment’, for **Tamilnadu Pollution Control Board (TNPCB)** at IIT Madras, Chennai, India, 16-20, July, 2007.
2. R. Saravanane, **Environmental Risk Assessment**, Presented for Short-term Course on ‘Recent Advances in Environmental Engineering’, at NIT Trichy, India, 19-23, February, 2007.
3. R. Saravanane, **Introduction to Environmental Sanitation and its Socio economic Well Being**, Presented for ‘Capacity Building Programme on Community Managed Sanitation and Solid Waste Management’ organised by **TWAD Board Chennai**, India, 8 – 13 October, 2007.
4. R. Saravanane, Expert Lecture for Workshop on **Cleaner Production Applications in Chemical and Pharmaceutical Industries**, organised by **Cleaner Production Cell, Andhra Pradesh Pollution Control Board (APPCB)**, Hyderabad, India, 18 th July 2008.
5. R. Saravanane, Expert Lecture for Workshop on **Pollution Abatement through Science and Technology** organised by Rajeev Gandhi College of Engineering and Technology, Pondicherry, India, 26 th May 2008
6. R. Saravanane, Special Lecture on “**CO<sub>2</sub> – KICK THE HABIT**” for the celebration of **World Environment Day**, organised by **Institution of Engineers (India) and Engineers and Scientists Association**, Neyveli Lignite Corporation Ltd, NLC, Neyveli, India, 19 th June 2008.
7. R. Saravanane, Expert lecture on “**Research and Teaching Methodology-Environmental Engineering**”, 20th Sep. to 1st Oct. 2008, at Ecole Supérieure d'Ingénieurs de Poitiers (ESIP), University of Poitiers, Poitiers, France.
8. R. Saravanane, Expert Technical lecture on “**KICK THE CO<sub>2</sub> HABIT**” for celebration of “**Environment Month**”, 18 th December 2008, **Steel Authority of India Limited (SAIL)**, Salem Steel Plant, Tamilnadu, India.
9. R. Saravanane, Expert Technical discussion on “**Engineering and Environmental Issues on feasibility of secondary sewage effluent to offshore algal growth**”, International workshop on **Wind, Sea Algae–Offshore cultivation of algae for biodiesel production**, 20 - 22 April 2009, Lolland, Copenhagen, Denmark.
10. R. Saravanane, Guest Lecture on, “**Environmental Engineering and Sustainable Development – An Overview**”, 30 th April, 2009, Manakula Vinayakar Institute of Technology, Puducherry, India.

11. R. Saravanane, Special Lecture on “Eco-friendly algae for Environmental Management” organised by **Institution of Engineers (India) and Engineers & Scientists Association**, 30 th September 2009, **Neyveli Lignite Corporation Ltd, NLC**, Neyveli, Tamilnadu, India.

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## **PROJECTS**

### **I. SPONSORED PROJECTS**

1. **Principal Coordinator** for an **AICTE Sponsored Research Project** titled, **Chemically Modified Low Cost Treatment for Heavy Metal Effluent Management Under Thrust area Scheme**, New Delhi, India (Sanctioned for Rs. 3.00 Lakhs for Two years)
2. **Chief Coordinator** for an **AICTE Sponsored Research Project** titled project titled, “*Studies on Fuzzy Logic Decision Support System for Integrated surface water restoration and Drought prediction Application on Rural and Semi-urban Areas*”, **Under R & D Scheme**, New Delhi, India (Sanctioned for Rs. 4.20 Lakhs (2003 – 2005)
3. **Modernization of Environmental Engineering Laboratory**, Sanctioned under **MODROB Scheme-AICTE**, New Delhi, India, (Sanctioned for Rs. 8.00 Lakhs (2003 – 2005).
4. **Principal Investigator, Characterization and Monitoring of Solid Waste Dumping Sites in Puducherry Region** – Department of Science, Technology and Environment (DSTE), Puducherry, 2007 -08.

### **II. CURRENT RESEARCH AND CONSULTANCY PROJECT**

- **Environmental Risk Assessment (ERA) of proposed Liquefied Petroleum Gas (LPG) Bottling Plant, Capacity 12000 MTPA**, Pondicherry Union Territory, Puducherry, India (**Completed- Rs. 50 lakhs**) )
- **In plant Modifications and Performance Evaluation for Sago and starch based factories**, Salem, Southern region, India (**Rs. 45 lakhs – completed**) )
- **Online monitoring of Biogas Plant (Capacity : 10m<sup>3</sup>) using Computer Aided Data Acquisition and Control**, INDP, Karaikal Region, Puducherry, India (**Rs. 25 lakhs – completed**).
- **Solid Waste Management – Municipal Solid Waste (40 Metric Tonne per day) Toxicity Characterization (TCLP)**, Leachate Treatment, Refuse Derived Fuel (RDF) alternatives to plastic waste management, INDP, Karaikal Region, Puducherry, India (**Rs. 50 lakhs**).
- **Design and Monitoring of STP, ETP, DEWATS, RO, DM, Industrial Air Pollution Control, Leachate treatment system**

## CONFERENCES/WORKSHOPS/ TRAINING

### SHORT-TERM TRAINING PROGRAMME CONDUCTED

**Coordinator** for an AICTE - ISTE sponsored – Short Term Training Programme on **Recent Advances in Waste Water Treatment with Emphasis on Anaerobic and Membrane Technologies, Pondicherry, India (16<sup>th</sup> to 28<sup>th</sup> , December 2002).**

### WORKSHOP/SEMINAR CONDUCTED

AICTE invited applications from AICTE recognized institutions to extend financial assistance for conducting one day workshop on the theme **Programme of Environment and Pollution Awareness**. One day workshop, titled, **Innovative Pollution Control Techniques for Sustainable Environmental Development**, was conducted in **Pondicherry Engineering College, Pondicherry, India, on 17<sup>th</sup> September 2004**. – Involved as coordinator and the recommendations were recorded.

### INTERNATIONAL CONFERENCE ORGANISED

- **Organiser and Technical Convener for - *International Conference on “Cleaner Technologies and Environmental Management”*, 4- 6, January 2007, Organised by Civil and Chemical Engineering Departments of Pondicherry Engineering College, Puducherry, India.**

[Under the sponsorship of Central Pollution Control Board (CPCB), New Delhi, India; Ministry Of Environment And Forests (MoEF), New Delhi, India; Council Of Scientific And Industrial Research (CSIR), New Delhi, India; CPHEEO, Ministry of Urban Development, New Delhi, India; Department of Science, Technology And Environment, Puducherry, India]

### INTERNATIONAL WORKSHOP ORGANISED

**Organising Secretary and Technical Convener**

**International Workshop on “Indo/French Technologies for Sustainable Environment”, 10 th April 2008, Organised by Department of Civil Engineering, Pondicherry Engineering College, Puducherry, India, Intercultural Network for Development and Peace, India and Poitou Charentes Region, France.**

## RESEARCH COLLABORATION

1. As Expert in International workshop **Journe'es Information Eaux**, 23 – 25 th Septembre, 2008, ESIP, Poitiers and **Research collaboration** during 20th Sep. to 1st Oct. 2008, at **Ecole Supérieure d'Ingénieurs de Poitiers (ESIP), University of Poitiers**, Poitiers, France.

2. Expert Technical discussion on “**Engineering and Environmental Issues on feasibility of secondary sewage effluent to offshore algal growth**”, International Workshop on **Wind, Sea Algae – Offshore cultivation of algae for biodiesel Production**, 20 - 22 April 2009, **Lolland, Copenhagen, Denmark** ([www.algaepedia.org](http://www.algaepedia.org))

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