



Subham Meher

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PhD - Environmental Engineering

Department- Civil Engineering

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Education

Degree/Certificate	Institute/Board	CGPA/Percentage	Year
M.Tech	Indian Institute of Technology, Guwahati	9.00	2019-2021
B.Tech	Veer Surendra Sai University of Technology Burla, Odisha	8.01	2014 - 2018
Senior secondary	CHSE board, Orissa	79.17%	2014
Secondary	BSE board, Orissa	77.83%	2012

Projects

- **M.Tech Thesis Project on Low cost wastewater treatments unit (vermifilter assisted with macrophytes)**

Dr. Saswati Chakraborty, Professor, Dept. of Civil Engineering, IIT Guwahati

Jan-July 2021

Project is based on organic and pathogen removal from sewage collected from IITG by using horizontal subsurface flow constructed wetlands (CW) and macrophytes assisted vermifiltration system (MAVF). In MAVF system earthworms and wetland plants were introduced, while in CW system only wetland plants were introduced. Both the systems were operated in partial saturation condition. Performance of both reactors in terms of organic removal efficiency was around 88 to 90%, while performance of both reactors in terms of pathogen removal efficiency was around 98 to 99%. In this project presence of earthworms in MAVF system were not so effective in terms of organic and pathogen removal efficiency, because performance of both reactors are more or less same with respect to these two parameters. But presence of earthworms were helpful in increasing alkalinity of MAVF reactor, while in CW system alkalinity was comparatively less, as a result CW system lost its buffering capacity during the peak nitrification period, hence pH was reduced to 6.4 during that period in CW system, while in MAVF system pH was maintained to 6.95 during that period. In this study small volume DO measurements was carried out through sampling ports of both reactors, so presence of earthworms enhanced DO in MAVF system due to their continuous burrowing and tunneling action, while DO in CW system was comparatively less. A correlation between ambient temperature with organic and pathogen removal efficiency was developed, in which organic removal efficiency was positively correlated with temperature with R^2 value more than 0.9 in both reactors, while correlation between ambient temperature and pathogen removal efficiency was not much, as a result R^2 value was around 0.3 to 0.5 in both reactors. In this study clogging was substantially reduced in MAVF system as presence of earthworms made the soil

porous due to their burrowing action and also taking care of settleable solids present in raw sewage, while CW system showed substantial clogging and ponding of water during the operation phase which would reduce the longevity of CW system. So MAVF system can eliminate one unit operation i.e. primary treatment for treatment of raw sewage for that further study is needed to optimize organic loading rate and hydraulic loading rate of MAVF system so that minimum clogging will occur.

• **Term Project on Leachate characterization and possible treatment Options**

Dr. Ajay Kalamdhad, Professor, Dept. of Civil Engineering, IIT Guwahati

Jan-May 2020

Project included one field visit to a boragaon dump site Guwahati for collection of leachate, characterization of leachate and evaluating the possible treatment options, I have also worked with one senior who treated this leachate through upflow anaerobic sludge (UASB) blanket that showed around 70 % BOD removal from leachate, but UASB require lot of process control like maintaining pH, alkalinity requirement, maintenance of temperature further effluent from UASB require further polishing treatment before discharging in water bodies because effluent has no DO, color problem, odor problem, so lot of effort is required for treatment of leachate. From this study what I felt if this leachate will recycle over the waste heap in that dump site itself then it will enhance the moisture content of entire waste which help in degradation of pollutants, because in boragaon dump site solid waste is mostly mix kind of waste contain large fraction of organics, because Guwahati municipal corporation directly dumped the entire waste in a boragaon dump site without any segregation and preprocessing, so recycling of leachate over the waste heap will be economical, but this is not applicable for engineered design landfill, where most of the waste consists of residue from preprocessing, residue from recycle and resource recovery solid wastes, in that case proper evaluation is needed for treatment of leachate generated from engineered design landfill, this is all about my term project.

• **B.Tech Project thesis on Leaching of soil and its effect on ground water quality**

Dr. R.R. Dash, Associate Professor, Department of Civil Engineering, VSSUT, Odisha Jan-MAY 2018

Project included a batch test to know the time of attaining equilibrium between soil and recharge water, it was concluded that the characteristic of tap water do not change significantly in equilibrium with campus soil and agricultural soil, hence leaching characteristic depend upon nature of soil and characteristic of water in contact with soil.

• **Summer Internship at PWD R&B Division Jharsuguda Odisha**

30 days Period of training at IB river Bridge Saphel Rampela ghat Sambalpur, Odisha

Aspirations and research interest

I am also interested to work for the development cost effective, easy to operate, require less process control water and wastewater treatment system so that it will helpful for people of rural India to manage their wastewater and get some quality drinking water. My ultimate dream is to become professor and apply my knowledge to eliminate the challenges associated with water and wastewater management crisis in India and

try to provide some quality drinking water to the people of my locality. If I really able to do so then one of the greatest objective of my life will be completed.

Technical skills

- **Programming languages:** C++, C
- **Technical Software:** MS Word, MS Excel, Autocad
- **Operating system:** Windows, Linux

Achievements

- **Odisha Disaster Preparedness Day 29th October 2008:** Secured 2nd position in the District level Junior Drawing contest.
- **State level Drawing Competition Organized by WHO:** Obtained merit certificate for present within top 100 among all participants.
- **Obtained Certificate for Outstanding Performance in CHSE board Exam 2014.**

Extracurriculars

- **RDEE 2020:** Attended a 5-day workshop on Recent Development in Environmental Engineering 2020 TEQIP II

