

**S. N. MOR ARTS, COMMERCE &
SMT. G. D. SARAF SCIENCE COLLEGE, TUMSAR.**

REPORT

Academic visit to



**National Environmental Engineering Research Institute
(CSIR-NEERI), Nagpur.**

28TH APRIL 2022

INTRODUCTION

National Environmental Engineering Research Institute or NEERI (CSIR-NEERI) falls under the Ministry of Science and Technology of Central Government, India. It was established in Nagpur in 1958 with focus on water supply, sewage disposal, communicable diseases, Industrial pollution treatment and management. It is located at Nehru Marg, Vasant Nagar, Nagpur. CSIR-NEERI working on research and development studies in environmental science and engineering. CSIR-NEERI would continue to strive for providing innovative and effective solution for environmentally sustainable development and to help government, industry and society especially the 800 million underprivileged people of India.





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PURPOSE OF THE VISIT

- To discuss with the Scientists on the research ideas pertaining to environmental and industrial pollution and their remedies.
- To understand the working of state of the art instruments being used to study research problems.
- To understand the opportunities available in NEERI for the students completing Graduate and Post-graduation.
- To understand overall working of CSIR Laboratory.

Visit to CSIR-NEERI audio visual

The visit started with the introduction of CSIR-NEERI at the auditorium on 10.30 am by audio visual presentation. In that audio visual section, establishment of CSIR-NEERI, overall working and recent research of CSIR-NEERI was explain. CSIR-NEERI working on sewage water treatment, NEERDHUR, Green Crackers, WAYU, NEERI-ZAR'. CSIR-NEERI also helps to Government Dream project such as Namami Gange, Swach Bharat etc.



Introduction of NEERI at Auditorium

NEERDHUR-At CSIR-NEERI (National Environmental Engineering Research Institute), NEERDHUR, a multi fuel improved cook stove has been developed with high overall thermal efficiency, reduced fuel consumption and reduced emissions through design improvements and technological innovations.

Green Crackers-CSIR-NEERI has been working since January 2018 for developing new and improved formulations for reducing emissions from fireworks. CSIR-NEERI developed new formulations for reduced emission light and sound emitting crackers (SWAS, SAFAL, STAR) with 30% reduction in particulate matter using Potassium Nitrate (KNO₃) as oxidant.

NEERI - ZAR : Portable Instant Water Filter-‘NEERI-ZAR’ is the water purification system suitable for potable water supply particularly under emergency situation with a wide range of flood water quality. The NEERI-ZAR meet drinking and cooking water requirements on emergency basis and serve as a disaster management tool for drinking water supply under flood affected situations. A typical unit, with two 100 L vessels, can serve about 20-30 persons, when operated for 10 hours a day, on the basis of 6-10 litres per capita/day for drinking and cooking purposes.

WAYU- "To combat the worsening air quality, CSIR-NEERI, has developed the WAYU (Wind Augmentation and Purification Units) device. The WAYU device works in two stages. The first stage uses a fan to suck in air around the device, which contains all kinds of pollutants like dust and particulate matter. These are separated using three blades of different dimensions. The device joint designed by IIT-Bombay and CSIR-NEERI.

Visit to Harit Sangrahalaya

After informative presentation, we move to harit sangrahalaya at 11.15 am. In harit sangrahalaya models, charts and demonstration of various projects were seen and explained by Ms. Pallavi Dange, Ms.Monika Chattrre, Mr. Mohtaseen Ahmad and Aishwarya Labhe (Researcher Scholar). Model, Charts, Demonstration of experiment and instruments present in Harit Sangrahalaya are

- Common effluent treatment plant
- Municipal solid waste plant
- Low cost automatic mechanical flusher
- Phytoid technology for sewage treatment
- Single pass photo catalytic reactor for de-colorization of textile effluents
- Solar electrode flouridation plant
- Iron removal plant
- Hydroplume –high rate secondary clarifier.
- NEERDHUR
- Green Crackers
- NEERJAR



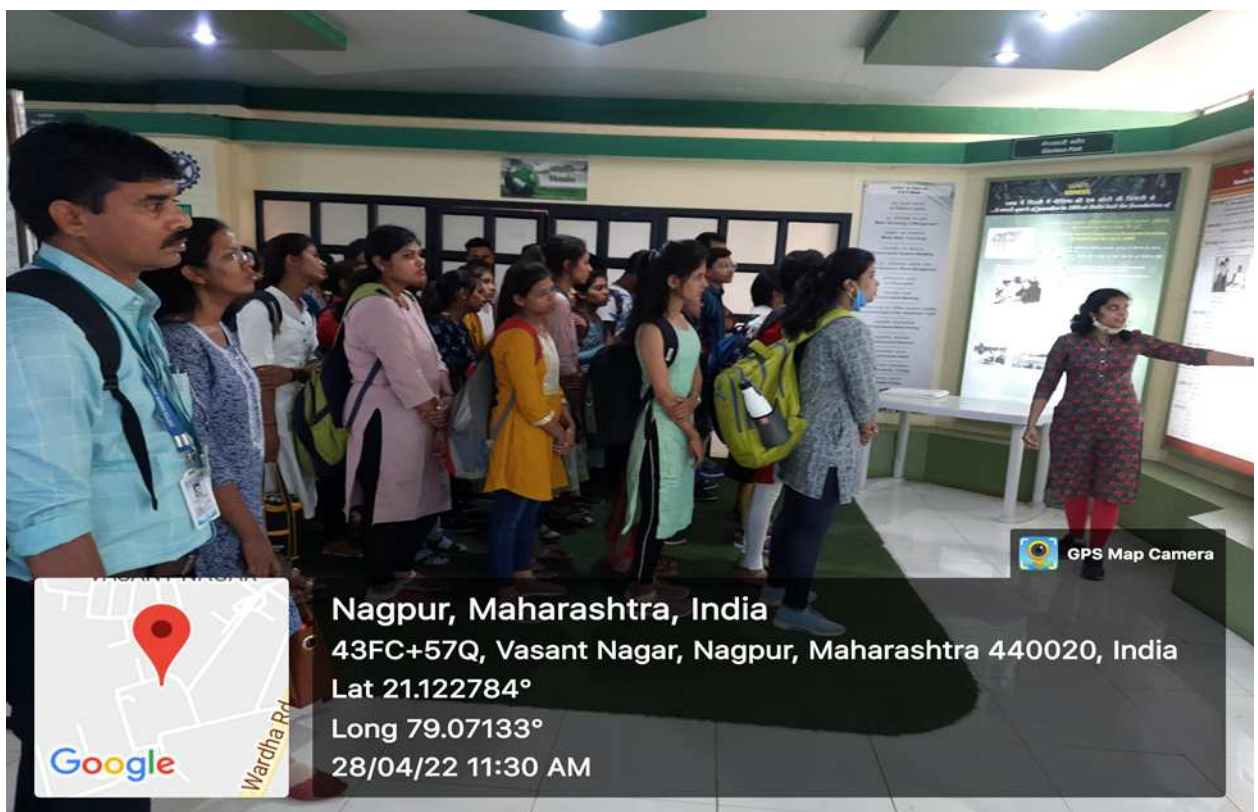
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Entrance of Harit Sangrahalaya



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Research scholar gives demonstration of the various projects



Visit to Health and Toxicity Cell (HTC)

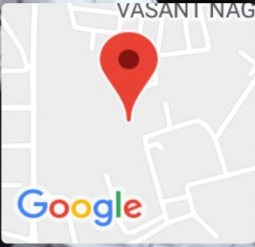
After harit sangrahalaya, we move to Health and toxicity cell at 12:00 pm. Health and Toxicity Cell (HTC) has facilities / instrument are Genomics, Proteomics, cell culture and Algal culture. Dr. K. Krishnamurthi (Chief Scientist & Head) gives information about health and toxicity cell and told that the core area of research is focused towards societal benefit to humankind/ environment such as

- Epidemiological study for assessing the environmental exposure induced human health effects.
- Development of an early diagnostic biomarker for industrial and occupational exposures using “Omics” approach.
- Ecotoxic risk assessment of environmental pollutants.
- Preventing the deleterious effects of environmental exposure using phytochemicals..
- Algal mediated CO₂ mitigation and its conversion to useful products like biofuels and nutraceuticals.

After visit to health and Toxicity cell, at 12:30 pm we had launch at NEERI canteen, we enjoyed our launch and move to next department i.e. solid waste management in Technology park.

Visit to Technology Park (SHWMD)

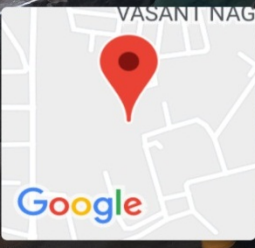
In Technology Park, we seen solid waste i.e. garden waste converted into powdered form, process of shrinking of waste thermocol, energy from red mud waste. Mr.Tushar Sonatkee, Ms.Sapna Akre and Ms. Monika chatter explained the demo experiment about waste management i.e. converts various waste into energy and useful products. This section of waste management motivates our students to think about conversion of various waste into useful products.



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Research scholar gives demonstration about waste management



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Dr. C. B. Masram, Principal of our college always gives idea about to visit such type of national Institute and various Industries. Dr. C. B. Masram always guides, support and motivates our student for such type of educational activities every year. The Visit was jointly organized by Department of Chemistry and Botany for B.Sc. semester-6 students. Faculty members Dr. Pravin A. Dhakite, Dr. J. V. Gadpayle, and Ms. Samiksha Borghare along with supporting staff Mr.Pankaj Bawankar and Rahul Randive visited to CSIR-NEERI with 39 accompanied students. Whole educational excursion was nicely organized and students got new experience and knowledge.