



National Odour Research and Management Institute (NORMI)

WELCOMES

Sri Badhavath Santhosh
(Additional Commissioner, GHMC)

ODOUR SNAPSHOT GHMC
AN ENVIRONMENTAL CONCERN
(MONITORING & MITIGATION MEASURES)

<http://www.odournormi.org/>

ABOUT NORMI



- A non-profitable and non- government public trust which is an advance unique technology-based Odour Research and Management institute comprising of expert team members who are working on odour research and management.
- NORMI comprises of expert team members drawn from various renowned Institutes from all across India.
- Many of them are having patents in their names in the field of Odour technologies.
- NORMI is one of the first Odour Research and management Institute in South East Asia aiming to collaborate at National and International level with reputed International Non-Governmental Organizations (INGOs, Institutes and Universities to provide value-based human resources through education, training & skill development programs.
- Besides advanced research and public awareness programs, NORMI will be committed to SDG Targets for 2030 especially by providing solutions for mitigation of odour.

OBJECTIVES OF NORMI



- To conduct scientific research, beneficial to industry, environment, public health as well as to the society.
- To identify, predict, evaluate and manage the impact of odour on public health & its mitigation measures.
- To manage & deliver exclusive expertise on analysis techniques for odour management. To promote and organize value-based human resource development through education, training & skill development programs.
- To design and develop instruments for the monitoring & measuring of odour.
- To perform sampling, analysis, monitoring and management using analytical and sensory method.
- To provide competency-based accreditation to organization on skill development.
- To achieve global competitiveness in research, innovation, technology and skill imparting.
- To sensitize and generate awareness among stakeholders about Odour including its adverse impacts and solutions thereof.
- To suggest and promote environment friendly policy framework for national and international bodies.

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CORE TEAM



Name	Profile
Dr. Girdhar Gyani	<ul style="list-style-type: none"> PRESIDENT of NORMI. Aims to provide single window solution and act as THINK TANK for all aspects related to Odour, including research, education, training, technology etc., aiming to have Odour Free Globe. Director General at ASSOCIATION of HEALTHCARE PROVIDERS, New Delhi, (INDIA). Former- Secretary General, Quality Council of India (QCI), India. Established and operated National Accreditation Structure (NABH) for healthcare for the first time in the country
Dr. Manoranjan Hota	<ul style="list-style-type: none"> Ex- Advisor- Ministry of Environment, Forests & Climate Change, Government of India. Former Chairman, Advisory Committee for management of E-Waste, Central Pollution Control Board, Delhi. Independent Environmental Expert/Advisor, Member, EIA Accreditation Committee of QCI-NABET & Expert Member, OECD Expert Group on Best Available Technology (BAT).
Dr. Nabarun Bhattacharyya	<ul style="list-style-type: none"> Senior Director and Centre Head - Centre for Development of Advanced Computing (C-DAC), Kolkata. 30 years of research experience in system designing, process automation, sensor & sensing system & developed sensors like ENOVISION System, E-Tongue System, AMMAR, Hand held electronic nose (HEN), Obnoxious Odour Prediction System (oops), Biosensing System: PestSCAN and BioSCAN. Published 9 Books, 120 Research Papers & Reports, 20 (Filed) Patents and 03 Granted Patents.

CORE TEAM



Name	Profile
Prof. Mukesh Khare	<ul style="list-style-type: none"> • Professor Emeritus – Department of Environmental Engineering, IIT Delhi. • Air Quality Expert - Member of High-level Task Force Chaired by PMO to deal with increasing air pollution in NCR. • Expert Member, EAC (Infrastructure-I and Non-Coal Mining), MoEFCC. • Former visiting faculty to Harvard University, USA, Ecole Des Moines de Nantes, France; University of West Indies, Trinidad and Tobago. • Published more than 200 research publications and author of 6 books in the area of air quality modelling.
Dr. U. Sridharan	<ul style="list-style-type: none"> • Ex. Advisor MOEFCC, New Delhi. • Experienced Scientist with a demonstrated history of working in Ministry of Environment, Forests & Climate Change, Government of India for more than 15 years.
Prof. Arvind Nema	<ul style="list-style-type: none"> • Dean (Student Affair) IIT, Delhi • Expert Member in CPCB's steering committee for Environmental Action Plan for CPAs • Expert Member for CPHEEO, MoUD, GoI Committee • Expert Member for the SEAC, Delhi • Expert member in the expert committee of NGT Principal Bench and CPCB New Delhi for Environmental Assessment of Industrial Units and Polluted Areas. • Chairman GATE, 2015 & Chairman JEE (Advanced), 2017 • Published 72 research papers in international and national Journals

CORE TEAM



Name	Profile
Dr. R. A. Pandey	<ul style="list-style-type: none"> • Ex-Chief Scientist & Head, Environmental Biotechnology Division CSIR-NEERI, Nagpur. • Worked in NEERI for last 37 years and involved in several R&D activities on environmental. • Executed 12 societal mission projects identified by Honorable Supreme Court of India. • Research focus on environment and odour, published 130 international journals, 27 National Journals, 09 Book Chapter, 06 patent.
Dr. Deepa Taneja	<ul style="list-style-type: none"> • Founder Director & First President - Recycling Environment Industries Association of India (REIAI). Dedicated towards sustainable future and converting our nation into a Zero Landfill Nation. It provides principles for guiding policy and priority setting, and includes an action plan for reducing and managing waste. • Expert in the field of Environment, Socio-Economics, Finance and Waste Recycling.
Dr. Sharvari Deshmukh	<ul style="list-style-type: none"> • Developed indigenous” electronic nose system” for industrial odor monitoring. Project part of “Make in India” initiative of government of India. • Postdoctoral research work from University de Liege, Belgium extensively on Olfactometers and sensors for odor monitoring. • Trained & applied odor measuring standards EN 13725 and EN 16841-1 and 2 for various on field and off field odor monitoring activities. • Expertise in the field of sensors, statistical analysis, process optimization and odour monitoring. • Publication in International journals = 15, International conference = 8 & Patent =1

CORE TEAM



Name	Profile
Mr. Satish Wate	<ul style="list-style-type: none"> Former Director, CSIR-NEERI, Nagpur and Former Chairman, Recruitment & Assessment Board (RAB), CSIR, New Delhi Chairman / Member of EAC constituted by MoEFCC; Chairman EIA Policy committee of MoEF&CC, GOI; Chairman, Accreditation Committee of QCI / NABET; Chairman Water Sector for IMPRINT projects of HRD ministry; Co-chairman Water Technology committee of DST & Member of FIST committee in Earth and Environment, as well as Waste management; Member, technical committee of Ganga Project, Water Resource ministry; Member, National Accreditation Board for Education and Training, Delhi; Member, Sustainability Council, Aditya Birla Group; Emeritus Professor in Environmental Medicine, DMIMS, Wardha; and Independent Director, Ceinsys Tech Ltd Nagpur.
Mr. Bharat P.Jain	<ul style="list-style-type: none"> Member Secretary Gujarat Cleaner Production Centre (Established by Industries & Mines Department, Government of Gujarat) Representative, RECPNet, UNIDO for Asia and Asia Pacific Centre Ex Member, E A C (violation), MoEF&CC, Govt. of India, New Delhi Vice Chairman, Narmada Clean Tech. (CETP), Ankleshwar, Director, CETP, Sarigam
Prof C. S. Dubey	<ul style="list-style-type: none"> Currently Working As Vice Chancellor at K R Mangalam University Gurugram Professor Emeritus (Honorary) in faculty of Science, Sri Sri University, Cuttack, Orissa Former Vice Chancellor of Sanskriti University, Mathura, U.P Former Director Institute of Lifelong Learning and Campus of Open Learning, Delhi University Former Member of Expert Appraisal Committee of MOEFCC, Govt. of India Edited 5 books/Monographs in Geology and Environmental studies and has more than 57 publications

CORE TEAM



Name	Profile
Dr. K. Karthikeyan	<ul style="list-style-type: none">• Ex – Director & Member Secretary Tamilnadu Pollution Control Board.• Ex - Member Secretary State Environmental Impact Assessment Authority, Tamil Nadu.• In regulatory & appraisal authority of Tamilnadu Pollution Control Board from 1986 to 2016.• Environmental Specialist in Impact Assessment, Environmental Safe Guards & Environmental Health & Safety.• Key Environmental Expert on water, waste water Treatment and disposal, modelling concentrated brine for marine disposal.
Mr. Ajay Garg	<ul style="list-style-type: none">• Corporate Lawyer and Registered Valuer at AGB & Partners.• Mentor of Startup India portal and 56 startups are under his mentorship.• Qualified Insolvency Professional, Qualified Independent Director & Doctorate in Commerce.• Diversified Professional, Effective Speaker, Technical Author - Writer and Social Entrepreneur with total corporate experience of 35 years.
Mr. M.A. Pathan	<ul style="list-style-type: none">• Ex- Chairman of Indian Oil Corporation Ltd.• EX- chairman of Petroleum Federation of India.• Group Resident Director, Delhi with TATAs• Holds nearly five decades of experience in the oil industry.

CORE TEAM



Name	Profile
Mr. Pankaj Kumar Satija	<ul style="list-style-type: none"> • Chief Regulatory Affairs in Tata Steel Ltd. • Holds more than 25 years of experience in Strategic Planning, Project Management, Mine Planning, Mining Operations, Training, Production and Maintenance. • A PMP certified professional has undergone Indo German Manager Programme at Germany, Global Advance Management Programme at Beijing and Tata Group Executive Leadership Development Program at UK. A LEAD Fellow of cohort 19 and a certified coach from Erickson Coaching International.
Dr. Meenal Mategaonkar	<ul style="list-style-type: none"> • Head of Department Civil Engineering NMIMS, Mumbai. • Associate Professor Water Resource Engineering, NMIMS, Mumbai. • Doctorate in Water Resource Engineering from the Indian Institute Of technology Mumbai. • Continuously involved in research with respect to Ground Water & Ground Water Pollution and Remediation by performing various simulation techniques.
Mr. P.K. Taneja	<ul style="list-style-type: none"> • Founder & Chairman of Nationally recognized NABET/QCI accredited Environment Engineering Consultancy, J. M. EnviroNet Pvt. Ltd. since 1993. • Member of Technical Committee of NABET, Quality Council of India. • An accomplished entrepreneur who has gained proficiency in providing consultation and execution of more than 3000 industrial projects with vision of attaining environment sustainability & making industrial establishments environmentally compliant.

CORE TEAM

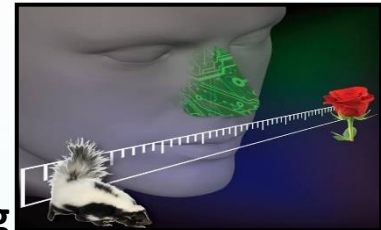
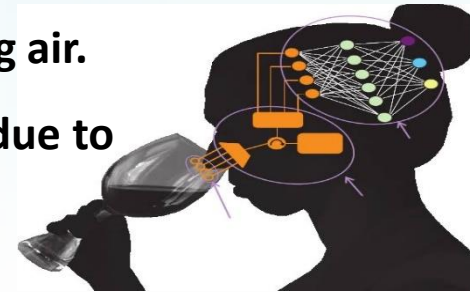


Name	Profile
Dr. Jitendra Yadav	<ul style="list-style-type: none"> Expert EIA Professional with experience of more than 15 years in environmental consultancy. Key experts in Development of National Guideline on Odour Monitoring & Management in Urban Municipal Solid Waste Landfill Site published in July, 2017 by CPCB.
Mr. Anuj Kumar Sharma	<ul style="list-style-type: none"> B. E. (civil engineering) Expert in Solid & Hazardous Waste Management Former DIRECTOR Shipping & Cargo Handling, Trilok Navigation Pvt. Ltd, Below Hotel LaPaz, Swatantra Path, Vasco Da Gama, Goa. Former Approved EIA Coordinator Building and Large Construction Projects (38) at NABET Landuse & landcover expert Expert in EIA/EMP Report preparation for Building and large construction projects
Mr. Surendra Yadav	<ul style="list-style-type: none"> Quality Manager and Odour expert. Executed more than 30 projects for odour Monitoring and its management plans at National & international level
Ms. Ishita Bhatt	<ul style="list-style-type: none"> Environment Engineer Certified Internal Auditor for ISO 9001 2015. Expertise in Solid waste Management, Water Quality Monitoring & Management & Env. Sustainability Management

ODOUR AS A HEALTH HAZARD



- Odour - defined as perception of smell.
- Property of certain substances, in very small concentrations, to stimulate chemical sense receptors (sense of olfaction) that sample surrounding air.
- Odour nuisance growing concern at national and international level due to rapid urbanization & industrialization as it influences quality of life.
- Odour emissions affect quality of life leading to psychological stress, insomnia, loss of appetite and irrational behaviour.
- Major concern under environmental health or public health.
- Priority concern for facility operators, engineers & urban planners dealing with waste.
- Minimizing and managing odour nuisance becoming a priority for leading industrial units and municipal bodies and other sources.



1. Issue- Order of the National Green Tribunal regarding restoration of Bum-Rukn-ud-Dowla, Shivrampally, Hyderabad, Telangana, 15/06/2021

Restoration of Bum-Rukn-ud-Dowla a historic heritage water body of around 104 acres, opposite National Police Academy, Shivrampally, Hyderabad, is the question for consideration. On receiving a complaint that water body was being destroyed by dumping of waste and sewage and encroachment.

Solution- NORMI can provide solution for that-

- Treat water body by using ECO friendly deodorant solution**
- Treat MSW site waste or dumping waste by using ECO friendly deodorant solution**

ODOUR AS A HEALTH HAZARD-HYDERABAD

2. Issue- HYDERABAD: “We can’t even bear the bad odour from Jawaharnagar Dump Site or at least two minutes?” said Central Pollution Control Board officials. who had inspected the Jawaharnagar municipal solid waste dumping yard on the outskirts of the city? In an inspection report filed with NGT. CPCB has found lacunae in the management of the yard.

Solution-NORMI can provide solution for that-

- Treat MSW site waste or dumping waste by using ECO friendly deodorant solution
- Treat Leachate, generated by MSW site by using ECO friendly deodorant solution

ODOUR AS A HEALTH HAZARD




3. Issue- Hyderabad: Short spikes of sulphur dioxide from IDA : -

there have been short spikes of sulphur dioxide (SO₂) ranging from 15-30 minutes from the IDA Bollaram industrial belt almost everyday for over a week.

Solution- NORMI can provide solution for that-

- **Monitoring of odourous compound using sensor base devices, than accordingly apply or use ECO friendly deodorant solution**


WITHIN PERMISSIBLE LIMITS?

 There is no need for concern as the atmosphere acts as a large sink for such pollution. SO₂ released by the industrial belt would be much lesser than that of a thermal plant

— Sources from TSPCB

➤ The spikes happen on most days between 11 am to 11:30 am



 Any industry using fuel can generate SO₂. There is a lack of research in the domain of air pollution and emissions in the city and this gap must be filled

Subba Rao | FORMER POLLUTION CONTROL BOARD MEMBER

4. Issue- Hyderabad: Foul smell from Patny nala makes life miserable- The residents of Rasoolpura complain that they have been spending sleepless nights for past two weeks due to the foul smell emanating from Patny Nala

Solution-NORMI can provide solution for that-

-Monitoring of odourous compound using sensor base devices, than accordingly apply or using ECO friendly deodorant solution

ODOUR AS A HEALTH HAZARD



5. Issue- Hyderabad: Hyderabad, where one-third of the country's drugs are manufactured, is unfortunately being referred to as the "city with the most polluted lakes",

Solution-NORMI can provide solution for that-

- **Monitoring of odourous compound using sensor base devices, than accordingly apply or use ECO friendly deodorant solution.**

ODOUR AS A HEALTH HAZARD



A wall is built inside the Mushkin Cheruvu in Poppalguda village of Ranga Reddy district.

6. Issue- Hyderabad: Hyderabad, where one-third of the country's drugs are manufactured, is unfortunately being referred to as the "city with the most polluted lakes",

Solution-NORMI can provide solution for that-

-Monitoring of odourous compound using sensor base devices, than accordingly apply or using ECO friendly deodorant solution.

ROLE OF NORMI –NATIONAL LEVEL



MITIGATION & MANAGEMENT OF ODOUR

MITIGATION & MANAGEMENT THROUGH

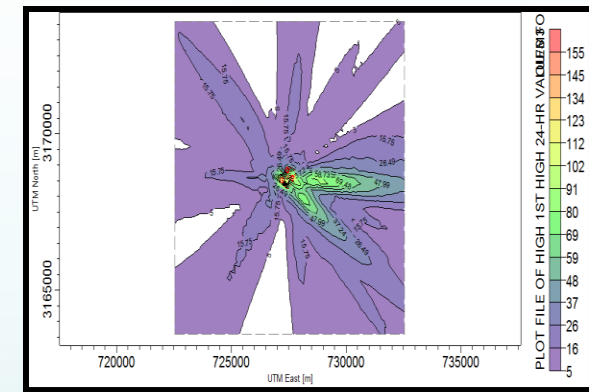
- ❖ Masking Agent
- ❖ Odour Eliminators (Bio- Enzymes)
- ❖ Process Modification
- ❖ Modification during Raw Material Dosing



ASSESSMENT OF DISPERSION OF THE ODOUR BY USING APPROPRIATE DISPERSION MODEL

The collected data from the Source will be processed using AERMOD model and following information will derived:

- I. Dispersion and direction of odour concentration/level
- II. Model also give you a ground level concentration of odour
- III. Incremental value of odour concentration
- IV. Isopleth of odour
- V. Contour map of odour level and intensity
- VI. Odour emission rate



GRAB SAMPLING USING TEDLAR BAGS





More info about GHMC always welcome!

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