

EVENT REPORT

National Seminar On World Ozone Day

Jointly organized by the Department of Environmental Science and Engineering, Delhi Technological University, & Green Institute for Research and Development, supported by the Ministry of Earth Sciences, Government of India

Theme- "Beyond the Shield: Bridging Ozone Recovery & Climate Action"

Date: 16th September, 2026

Venue: Pragyan Hall, 2nd Floor, Admin Building, DTU

Executive Summary and event overview

A National Seminar entitled "Beyond the Shield: Bridging Ozone Recovery & Climate Action" was organized on 16 September 2026 at Delhi Technological University (DTU). The seminar was jointly organized by the Department of Environmental Science and Engineering at Delhi Technological University and the Green Institute for Research and Development, with support from the Ministry of Earth Sciences, Government of India. The event provided a platform for experts, researchers, students, and participants to engage with contemporary issues related to ozone recovery and climate action. The seminar focused on the relationship between ozone-layer recovery and climate action, highlighting the importance of scientific understanding, technological approaches, environmental management, and collective action for addressing atmospheric and climate-related challenges. The theme emphasized moving beyond ozone protection towards broader climate-conscious environmental action. The session began with the National Song, a floral welcome for guests, and lamp lighting, followed by an introduction of the event by **Dr. Rajeev Kumar Mishra**, Department of Environmental Science and Engineering, DTU, and a welcome address by **Dr. Geeta Singh**, Head, Department of Environmental Science and Engineering, DTU.

Participants/Attendance

The program was attended by research scholars, B.Tech students, M.Tech students, and faculty members of the University, with a total of 62 participants. It also marked 21 participants in the painting competition.

Distinguished guests and speakers

The inaugural session further included addresses by **Mr. Shamsuddeen A.K.**, Secretary, Green Institute for Research and Development; **Dr. K.P. Hareendran Achari**, President, Green Institute for Research and Development; **Prof. Govind Pandey**, Director General, Buddha Group of Institutions, Gorakhpur; **Prof. Mukesh Sharma**, Professor-Emeritus, IIT Kanpur; **Dr. Praveen Kumar**, Scientist-G, MoES; and **Prof. Prateek Sharma**, Hon'ble Vice

Prateek Sarni



Chancellor, DTU. The session concluded with a vote of thanks by **Mr. Prateek Saini**, Department of Environmental Science and Engineering, DTU.

Technical Session I was conducted and moderated by **Prof. Niraj Sharma**, Professor Emeritus in the Department of Environmental Science and Engineering at DTU. The session brought together experts working in atmospheric science, air-quality measurement, and environmental engineering.

Dr. Ramakrishna Ramishetty, Senior Scientist in Switzerland, discussed the importance of connecting ozone, VOCs, and climate through real-time atmospheric chemistry, with particular emphasis on understanding the interactions and impacts among ozone, Volatile organic compounds (VOCs), particulate matter (PM), and climate physics. A key focus on wintertime $PM_{2.5}$ and nitrate formation in urban environments. The session also emphasized the need for real-time physicochemical measurement and advanced air-quality monitoring, including mass spectrometry, time-of-flight (TOF) mass spectrometry, and mobile measurement platforms.

Dr. Shankar G. Aggarwal, Professor (AcSIR) & Chief Scientist, CSIR–National Physical Laboratory, New Delhi, delivered a presentation on *“Atmospheric Gases and Particle Chemistry in Real-World Scenarios.”* He explained the distinction between protective stratospheric ozone and harmful ground-level ozone, along with their formation processes, atmospheric chemistry, and impacts on human health and the environment. He covered important milestones in ozone research, including the discovery of ozone, the identification of the Antarctic ozone hole, and the scientific understanding of CFC-driven ozone depletion. Particular emphasis was placed on air-quality measurement and metrology, with an overview of standard techniques used for monitoring pollutants such as NO_x , SO_2 , CO, and ozone. He also highlighted the role of CSIR-NPL in establishing reliable, standardized, and traceable air-quality measurements through reference standards, calibration facilities, and metrological infrastructure. He further presented observations from Delhi, discussing seasonal and diurnal variations in ozone, NO_2 , SO_2 , CO, and black carbon and explaining the influence of meteorological conditions, boundary-layer dynamics, and regional pollution sources such as crop-residue burning and winter heating.

The session also featured **Prof. Sri Harsha Kota**, Professor, Department of Civil & Environmental Engineering and CERCA Chair Professor, IIT Delhi, who presented on *“Ground Level Ozone (GLO) in India: Status & Way Forward.”* He highlighted growing concern about GLO concentrations in India and discussed their potential impacts on human health, particularly respiratory and cardiometabolic health. A Delhi-based study was presented to examine the relationship between GLO exposure and hospital admissions, demonstrating an association between elevated ozone exposure and increased respiratory and cardiometabolic hospitalizations even after accounting for other major air pollutants. He further discussed the predominantly particulate-matter-focused approach of existing clean-air programs and

Prateek Saini



emphasized that effective ozone management requires simultaneous consideration of NO_x and VOC emissions.

Technical Session-II was conducted and moderated by **Mr. Anunay Gour** of the Department of Environmental Science and Engineering at DTU and featured three expert presentations on ozone protection, climate action, and sustainable transportation.

Dr. Anil Kumar, Ex-Director, Department of Environment, Government of Delhi, spoke on "*World Ozone Day 2026: Montreal Protocol – India's Success Story*," highlighting the significance of ozone protection, sustainable cooling, the science of ozone depletion, and the role of the Vienna Convention, Montreal Protocol, and Kigali Amendment. He discussed India's successful phase-out of major ozone-depleting substances, implementation of the HCFC Phase-out Management Plan, and its commitment to reducing HFC consumption by 85% by 2047, emphasizing the importance of energy-efficient cooling for climate action.

Dr. Chinmay Kumar Jena, Scientist D, Environment Monitoring & Research Center, India Meteorological Department (IMD), presented "*Beyond the Shield: Bridging Ozone Recovery & Climate Action*," explaining the distinction between stratospheric and ground-level ozone, the formation of the Antarctic ozone hole, the role of CFCs and polar stratospheric clouds, and the gradual recovery of the ozone layer. He also highlighted India's long-term ozone monitoring infrastructure, sustainable cooling practices, and individual measures to reduce UV exposure.

Dr. Vimal Gahlot, Director, Center for Research & Sustainable Development (CRSD), Government of Rajasthan, speaks on "Sustainable Transportation: Strategies for a Climate-Resilient Future," focusing on road safety, the limitations of car-centric planning, and the need for people-centered, low-carbon mobility. He discussed public transportation, Mass Rapid Transit Systems, Transit-Oriented Development, multimodal connectivity, and Mobility-as-a-Service, as well as emerging solutions such as electric buses, MetroLite, MetroNeo, ferry metro, and cable-car transit. The session also emphasized demand-side measures such as car-sharing, bike-sharing, and car-free days, while highlighting the importance of sustainable transportation in achieving climate resilience, safer mobility, and sustainable urban development.

The technical sessions were followed by a panel discussion, which allowed participants to reflect on the themes covered throughout the day and to recognize those associated with the event's organization. The formal program concluded with a vote of thanks delivered by **Mr. Prateek Saini** from the Department of Environmental Science and Engineering, DTU. A painting competition was also held alongside the seminar at the B.R. Auditorium.

Key takeaways

- **Integrated understanding of atmospheric chemistry:** Effective air-quality management requires understanding the interactions among ozone, VOCs, NO_x.

Prateek Saini 

particulate matter, meteorology, and climate processes, rather than addressing pollutants independently.

- **Need for advanced real-time monitoring:** Real-time physicochemical measurements, including mass spectrometry, TOF-MS, and mobile monitoring platforms, are essential for identifying pollutant sources, atmospheric transformation processes, and exposure patterns.
- **Importance of measurement and metrology:** Reliable air-quality management depends on standardized, calibrated, and traceable measurements of pollutants such as O₃, NO_x, SO₂, CO, and particulate matter.
- **Ground-level ozone is an emerging health concern:** Elevated GLO exposure was associated with increased respiratory and cardiometabolic hospital admissions, highlighting the need to strengthen ozone-focused air-quality management.
- **Ozone control requires precursor management:** Effective GLO mitigation requires coordinated control of NO_x and VOC emissions, in addition to the existing emphasis on particulate matter.
- **Montreal Protocol demonstrates successful international environmental action:** The phase-out of ozone-depleting substances illustrates how scientific evidence, international cooperation, policy, and technological transitions can address global environmental challenges.
- **Ozone protection and climate action are interconnected:** Sustainable, energy-efficient cooling, along with the implementation of the Kigali Amendment, can contribute to both ozone-layer protection and climate mitigation.
- **Continuous monitoring of the ozone layer remains important:** Long-term atmospheric observations are essential for tracking ozone recovery, climate interactions, and emerging atmospheric changes.
- **Sustainable transportation is essential for climate-resilient cities:** Urban mobility should shift from car-centric planning toward public transport, mass rapid transit, walking, cycling, multimodal connectivity, and shared mobility.
- **Technology must be supported by behavioural and planning measures:** Electric buses and new transit systems should be complemented by car-sharing, bike-sharing, transit-oriented development, and demand-management strategies.

Conclusions

The technical sessions demonstrated that ozone protection, air-quality management, climate action, and sustainable urban development are closely interconnected environmental priorities. Effective solutions require a combination of advanced monitoring, scientific understanding, reliable measurement systems, precursor-emission control, sustainable technologies, strong

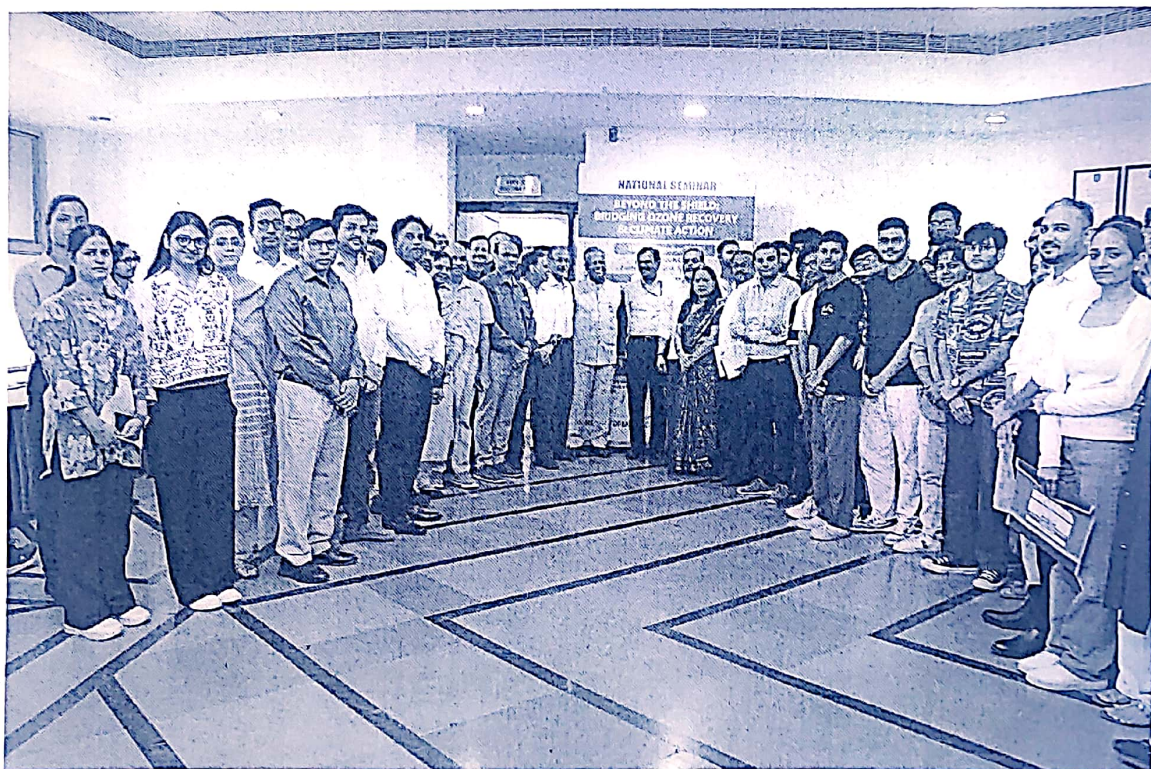
Prateek Sami



policies, and public participation. The discussions also highlighted that India has made significant progress in protecting the ozone layer under the Montreal Protocol. In contrast, emerging challenges such as ground-level ozone, urban air pollution, climate change, and unsustainable transportation require continued scientific and policy attention.

Feedback

Overall, the seminar reinforced the message that science-based decision-making, technological innovation, policy implementation, and individual/collective action must work together to achieve a healthier atmosphere, climate resilience, and sustainable development. The seminar brought together experts and participants to examine ozone-layer recovery and its linkages with climate action. Across the technical sessions, participants had the opportunity to learn from expert presentations and discussions spanning policy, atmospheric science, public health, and sustainable mobility, while the event as a whole fostered academic interaction, awareness, and engagement on contemporary environmental issues. Overall, the seminar offered valuable exposure to expert perspectives on ozone protection, climate action, and environmental management.



Prateek Sami



Dr. Rajeev Kumar Mishra
Event Coordinator

Mr. Prateek Saini
Event Co-coordinator