



# PakAtom

Newsletter of the Pakistan Atomic Energy Commission

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## Chashma Nuclear Power Plant Unit-2 Sets a Unique Record



*A view of Chashma Nuclear Power Plant Unit -2*

Chashma Nuclear Power Plant Unit-2 (C-2) has achieved a historic milestone by completing 417 days of safe and uninterrupted Breaker-to-Breaker operation (from August 25, 2024 to October 16, 2025), marking the first such achievement in Pakistan's history.

Breaker-to-Breaker operation is a technical term referring to a plant's continuous operation from the moment it is reconnected to the national grid through the Generator Circuit Breaker (GCB) following a Refuelling Outage (RFO), until its next scheduled disconnection via the GCB for the subsequent RFO, without any unplanned shutdowns or trips. C-2 accomplished this remarkable feat while maintaining full compliance with all safety standards and operational parameters set by national and international regulatory bodies. This achievement is a testament to the dedication, professionalism, and technical excellence of the engineers, scientists, and technicians of PAEC.

Dr. Raja Ali Raza Anwar, Chairman PAEC, congratulated the Member (Power) and his entire team on this milestone in operational excellence. Mr. Mohsin Fayyaz, Member (Power), PAEC, also commended the teams working at the Chashma Nuclear Power Generating Station (CNPGS) for their exemplary performance.

Pakistan Atomic Energy Commission currently operates six nuclear power plants with a combined generation capacity of 3,530 MW. Of these, four are located at Chashma near Mianwali, while K-2 and K-3 are based in Karachi.

Through its sustained efforts, Pakistan Atomic Energy Commission continues to contribute towards achieving the United Nations Sustainable Development Goal (SDG) 7, ensuring access to affordable, reliable, sustainable, and modern energy for all.

## NIAB Conducts First Training Course on Mutation Breeding Techniques for Enhancing Crop Architecture

The Plant Breeding and Genetics (PBG) Division at NIAB, Faisalabad, organised its first training programme titled "The Use of Mutation Breeding Techniques for the Improvement of Crop Architecture" from November 5 to 6, 2025. A total of 31 participants, including scientists, researchers, professionals, and students from various R&D organisations and academic institutions, attended the two-day programme.

The programme commenced with an inaugural session in which the organiser, Prof. Dr. M. Jawad Asghar (PS), outlined the objectives and significance of the training, highlighting the growing importance of mutation breeding in modern crop improvement strategies. Dr. Uzma Maqbool (DCS), Director NIAB, welcomed the participants and commended their interest in enhancing their knowledge of mutation-based techniques. The Chief Guest, Prof. Dr. M.



*Director NIAB addressing the course participants*



*Group photo of the participants at the concluding session*

Yussouf Saleem (CS), DG A&B, PAEC Headquarters, appreciated the organiser's efforts in designing a timely and highly relevant training programme.

The programme was structured to progressively build participants' understanding from foundational concepts to advanced applications of mutation breeding. Through lectures, demonstrations, interactive discussions, and laboratory visits, participants gained practical insights into mutation induction, trait improvement, and the development of resilient crop varieties. The training equipped attendees

with essential skills to address emerging agricultural challenges, particularly those posed by climate change, while contributing to food security and sustainable agriculture.

The concluding session featured a vote of thanks by Prof. Dr. M. Kashif Riaz Khan (DCS), Head of the PBG Division. Dr. Uzma Maqbool, Director NIAB, congratulated the organising team on the successful completion of the training programme and distributed certificates among the participants.

## AECH NORI Hosts Breast Cancer Awareness Seminar & Walk



*A group photo of Director NORI, hospital officials and participants of the seminar*

The Atomic Energy Cancer Hospital (AECH) NORI hosted a seminar titled "Awareness Regarding the Importance of Early Cancer Detection among the General Public and Breast Cancer Detection among Females" on October 22, 2025, as part of its Breast Cancer Awareness Campaign, which is conducted annually in October.

While addressing the seminar, Dr. Humera Mahmood, Director NORI, highlighted the various diagnostic and treatment facilities available at NORI. She stated that AECH NORI is equipped with cutting-edge technology and delivers comprehensive cancer management through specialised departments in Nuclear Medicine, Radiology, Radiation Oncology, and Medical Oncology. The facilities include state-of-the-art equipment such as PET-CT, SPECT-CT, cyclotrons, linear accelerators, CyberKnife, and brachytherapy, complemented by modern MRI, CT scan, and digital X-ray systems.

She further stated that AECH NORI was designated as an Anchor Centre by the International Atomic Energy Agency (IAEA) in 2023, in recognition of the hospital's

commendable efforts in the fight against cancer. AECH NORI is now actively involved in educating and training medical professionals from the region and is participating in several IAEA projects under the Rays of Hope initiative.

The speakers at the event consisted of medical professionals from AECH NORI, including Dr. Saima Madiha Shabbir (Oncology Department) and Dr. Sadaf Tufail Butt (Radiology Department), who emphasised the need to create public awareness, particularly among women, regarding breast cancer. They highlighted that a healthy lifestyle and balanced diet contribute to the prevention of breast cancer, while regular self-examinations, routine medical check-ups, early detection, and timely treatment significantly improve cure rates.

The medical professionals from AECH NORI reaffirmed their commitment to innovation and dedication to adopting the latest advancements in cancer treatment, including sophisticated therapeutic techniques. The seminar concluded with the Awareness Walk.

## GINUM Organises Month-Long Breast Cancer Awareness Drive



*Glimpses of the Breast Cancer Awareness Activities*

October is observed globally as Breast Cancer Awareness Month, emphasising the critical role of early detection in improving survival rates and treatment outcomes. In alignment with this global initiative, Atomic Energy Cancer Hospital (AECH), Gujranwala Institute of Nuclear Medicine (GINUM) undertook extensive awareness, education, and screening activities throughout the month to promote breast health among diverse segments of the community.

As part of its awareness drive, GINUM also organised HOPE Carnival 2025 at its premises. The event featured dedicated awareness booths for cancer patients and visitors, along with free screening services, nutritional counselling, and physiotherapy sessions, creating a holistic, patient-centred environment.

On the academic front, GINUM hosted the 12<sup>th</sup> Biennial Conference of the Pakistan Medical Association, during

which Dr. Asima Sohail delivered an inaugural lecture titled “Diagnostic Approach to Palpable Breast Lump: Bridging Guidelines with Local Realities.” The conference provided a valuable platform for knowledge exchange among healthcare professionals.

Public engagement was further strengthened through a large-scale breast cancer awareness seminar organised at GINUM for the general public. These sessions reached a wide audience, including students, healthcare workers, and employees, significantly enhancing community awareness and advocacy for breast cancer screening.

Through these comprehensive and coordinated efforts, GINUM reaffirmed its commitment to cancer prevention, early detection, and community education, contributing meaningfully to the global fight against breast cancer during Breast Cancer Awareness Month.

## Strengthening Food Safety: NIAB Organises Three-Day National Training Course



*Group photo of participants with Director NIAB and course organizers*

The Food Safety Laboratories (ISO/IEC 17025 accredited) of the Nuclear Institute for Agriculture and Biology (NIAB), Faisalabad, organised a three-day national training programme from October 7 to 9, 2025, to strengthen participants’ practical skills in modern analytical techniques for food safety in Pakistan. The programme included hands-on sessions on microbial screening, ELISA, radioreceptor

binding assay (CHARM-II), and chromatographic analyses (HPLC, GC, and LC-MS), equipping participants with advanced competencies in food quality assurance.

A total of 43 early-career researchers and regulators from leading universities, research institutes, and government organisations across Pakistan attended the training.

During the inaugural session, Dr. Uzma Maqbool, Director NIAB, highlighted the institute's pivotal role in advancing Pakistan's agricultural and food safety sectors.

Dr. Muhammad Yasin, Course Organiser, underscored the laboratory's state-of-the-art facilities and its contributions under various PAEC- and IAEA-funded projects. He also highlighted NIAB's ongoing collaboration with the Animal Quarantine Department of the Ministry of National Food Security and Research (NFS&R) for export control testing of animal-derived food products.

Since 2018, the laboratories have analysed approximately 1,025 food consignments, supporting national exports valued at around US \$62 million and significantly contributing to Pakistan's compliance with international food safety and quality standards.

The technical sessions featured special lectures by Mr. M. Ismail Chughtai (NIAB) on veterinary drug residue screening using ELISA and CHARM-II; Dr. Talat Mahmood (Kohsar University, Murree) on food microbiology and risk assessment; and Dr. M. Usman Qamar (GCUF) on the antimicrobial resistance landscape in Pakistan. Practical demonstrations on pesticide residue analysis and microbial screening were conducted by Dr. Rashid Ahmad Khan (NIAB) and Dr. M. Salah-ud-Din Shah (NIAB).

The programme concluded with a certificate distribution ceremony, during which the Director NIAB commended the participants for their enthusiasm and dedication. The initiative was widely appreciated as a significant step towards enhancing Pakistan's analytical capacity, promoting safe food trade, and strengthening the national food safety infrastructure.

## ICCC's Participation in RISE Expo 2025



Group photo of DG ICCC and other PAEC officials at the display

The Instrumentation Control and Computer Complex (ICCC) participated in the Industrial Expo titled "Revolutionising Industry through Science & Engineering" (RISE 2025), held from October 27 to 31, 2025, at the NCP, Islamabad.

The event was inaugurated by Prof. Ahsan Iqbal, Federal Minister for Planning, Development, and Special Initiatives. Key activities included product demonstrations and networking with officials, industry representatives, and other stakeholders.

ICCC was one of the 40 national organisations participating in the five-day expo and served as PAEC's representative. The organisation showcased a range of innovative products and R&D achievements aimed at enhancing market outreach and exploring new collaborative opportunities. More than 500 visitors engaged with the ICCC stall and expressed strong interest in its technologies and services. Product brochures, quotations, and contact information were shared with interested companies and attendees.

Dignitaries from PAEC and its sister organisations also visited the ICCC stall and provided encouraging feedback. The expo concluded with a closing ceremony graced by Mr. Khalid Hussain Magsi, Federal Minister for Science and Technology.



Prof. Ahsan Iqbal (Federal Minister) & other dignitaries visiting the stall

## PIEAS & IAEA Conduct Advanced Training on Computational Methods for Nuclear Reactor Modeling

The Department of Nuclear Engineering (DNE), PIEAS, in collaboration with the International Atomic Energy Agency (IAEA), successfully organized a three-day training course titled “Overview of Advanced Computational Methods for Nuclear Reactor Modeling” from November 26 to 28, 2025. Held under the framework of the IAEA–PIEAS Collaborating Centre (CC), the event brought together professionals, researchers, students, faculty members, and international experts from the IAEA.

Ms. Katya Slavcheva attended the course in person as the lead technical representative from Nuclear Power Technology Development Section (NPTDS), IAEA. In addition, several senior IAEA specialists, including Mr. Frederick Reitsma, Section Head, NPTDS, delivered virtual presentations.

The programme aimed to strengthen national capacity in nuclear engineering and support Pakistan's continued alignment with international best practices in reactor analysis. Participants received in-depth exposure to emerging computational tools and techniques used in reactor design and safety assessment, including multi-physics simulations, Monte Carlo methodologies, high-performance computing, and AI-driven modeling

approaches. The course concluded with a certificate distribution ceremony led by Dr. Jamil Ahmad, Pro-Rector, PIEAS, and Ms. Katya Slavcheva. Both commended the efforts of the DNE and the IAEA–PIEAS team for successfully organizing the event. Participants appreciated the initiative as a significant contribution to capacity building in advanced computational reactor modeling.



*Lead Technical Representative from NPTDS, IAEA*



*A Group photo of Ms. Katya Slavcheva, lead technical representative from NPTDS, IAEA and participants with Pro Rector PIEAS*

## NIFA Organises One-Day Training Workshop on Management of Dengue Vector Mosquitoes Using Conventional and Advanced Nuclear Techniques

The Nuclear Institute for Food & Agriculture (NIFA), Peshawar, organized a one-day training workshop on “Management of Dengue Vector Mosquitoes Using Conventional and Advanced Nuclear Techniques” on November 18, 2025. The event brought together 37 participants from a range of organizations, including medical entomologists from the District Health Offices of Nowshera, Charsadda, Hangu, Mardan, and Peshawar; officers and extension workers from Agriculture Extension, Nowshera and Peshawar; as well as faculty and students from The University of Agriculture Peshawar, Abdul Wali Khan University, Mardan, Bacha Khan University, Charsadda, Shaheed Benazir Bhutto Women University, Peshawar, and Government College for Women, Nowshera.

Dr. Gul Zamin Khan, the organiser of the workshop, highlighted the key objectives of the event: raising awareness and promoting the adoption of timely, effective,

and environmentally responsible dengue vector control strategies, integrating both conventional techniques and advanced nuclear-based tools. He also emphasised NIFA's ongoing contributions under the IAEA Technical Cooperation Project RAS5095.

The workshop was formally inaugurated by Dr. Syed Jawad Ahmad Shah, Officiating Director, NIFA, who appreciated the efforts of the Plant Protection Division for organizing the event. He underscored the importance of interdisciplinary collaboration and the adoption of eco-friendly pest suppression technologies to safeguard public health.

The technical session featured presentations by Dr. Gul Zamin Khan, Dr. Muhammad Misbah-ul-Haq, and Dr. Habib Ahmad (DHO, Charsadda) on Integrated Vector Management (IVM) strategies for the sustainable control of dengue vectors. Participants later visited the Irradiation Facility and Mosquito Rearing Laboratories, where Mr.

Muhammad Salman, briefed them on mosquito colony maintenance, irradiation procedures, and environmentally friendly dengue vector management practices.

During the concluding session, participants expressed appreciation for NIFA's research contributions and the Plant Protection Division's pivotal role in advancing dengue vector control in Pakistan. Certificates were distributed by

Dr. Syed Jawad Ahmad Shah, Head of the Plant Protection Division and Officiating Director, NIFA.

The workshop concluded with a collective commitment to enhancing collaboration and promoting sustainable, scientifically advanced vector control technologies across Pakistan.



*Group Photo of Dr. Syed Jawad Ahmad Shah, Officiating Director, NIFA, PAEC Officials & other participants*

## Workshop on Application of Quantitative Risk Assessment Techniques

The Directorate of Probabilistic Assessment (DPSA), Directorate General of Safety (DOS), organized a three-day workshop on Application of Quantitative Risk Assessment Techniques from November 10 to 12, 2025, at PAEC Headquarters, Islamabad.

The workshop aimed to sensitize professionals to the benefits and practical applications of the Risk Watcher software, including the use of Probabilistic Safety Assessment (PSA) in Vital Area Identification, Safety Security Interface Assessment, integration of machine

learning in risk assessment, and safety evaluation of non-reactor facilities. A key highlight of the workshop was the full-scope demonstration of Risk Watcher, complemented by discussions on practical examples illustrating its applicability in real-world scenarios.

A total of 39 participants from various PAEC establishments attended the workshop, providing a valuable platform for knowledge sharing, capacity building, and professional collaboration.



*Group photo of the participants of the Workshop on Application of Quantitative Risk Assessment Techniques with the Chief Guest*

## PAEC Showcases Scientific Excellence at Lahore Science Mela 2025

Pakistan Atomic Energy Commission (PAEC) once again took a leading role in the 6<sup>th</sup> Lahore Science Mela (LSM-2025), held from October 27 to 28, 2025, at Crescent Model Higher Secondary School, Lahore. Organized by the Khwarizmi Science Society (KSS), the two-day event attracted over 100,000 visitors, including students, families, educators, and science enthusiasts from across the region.

PAEC's active participation highlighted its long-standing commitment to promoting a culture of scientific inquiry in Pakistan. The Commission's pavilion featured engaging displays of its contributions in minerals exploration, nuclear power generation, agricultural innovation, and healthcare technologies. Notable exhibits included radio-pharmaceutical kits for cancer diagnosis developed by Pakistan Institute of Nuclear Science and Technology (PINSTECH), a model nuclear power plant, indigenously developed vaccines, and a variety of agricultural and mineral-sector products.

Visitors were especially excited to interact with the champions of the International Nuclear Science Olympiad (INSO) 2025, trained and mentored by Pakistan Institute of Engineering and Applied Sciences (PIEAS), a flagship institution of PAEC. Their presence added inspiration for young learners exploring careers in science and technology.

The PAEC pavilion also showcased the Commission's longstanding collaboration with the European Organization

for Nuclear Research (CERN), a key highlight that drew considerable interest from the public.

Member (Admin), Pakistan Atomic Energy Commission (PAEC), Maj Gen Asim Khan visited the Lahore Science Mela 2025, and commended the organizers, participating institutions, and PAEC participants for successfully creating an inspiring, science-focused environment for the public. He appreciated the quality and diversity of the exhibits, particularly PAEC's own contributions in education, research, and public health. He noted that such initiatives play an essential role in fostering a broader scientific culture in the country. He reaffirmed PAEC's commitment to supporting such ventures in the future as well. He further emphasised the importance of wider national engagement for education and scientific innovation.

Dr. Rashid Mahmood, Director Public Relations, PAEC, lauded the success of the event and emphasised that such events ignite curiosity, promote love for scientific research, and quench the thirst of young minds to know more. With its diverse activities, including planetarium shows, laser demonstrations, hands-on workshops, interactive science games, and themed exhibitions, the Lahore Science Mela served as a vibrant platform for promoting scientific literacy. Through its participation, PAEC reaffirmed its commitment to supporting such initiatives nationwide and encouraged the expansion of similar science festivals, enabling broader public engagement with education and research.



Group photo of PAEC officials at Lahore Science Mela 2025



Glimpses of Lahore Science Mela 2025

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