

HIGHLIGHTS OF ACTIVITIES

The Atomic Energy Regulatory Board (AERB) continued to carry out safety monitoring and regulatory supervision of nuclear and radiation facilities under its purview. Regulatory safety oversight of operating power plants, nuclear power projects (under site evaluation/under construction), several fuel cycle facilities, research units and large numbers of radiation facilities spread across the country was carried out.

All operating nuclear power plants and fuel cycle facilities under AERB's purview operated safely during the year and radioactive discharges and radiation doses to occupational workers were well within prescribed limits. The radioactive releases from nuclear power plants remained well within the limits authorised by AERB and the effective dose to public around the nuclear power plant sites was far less than the annual limit of 1 mSv.

KEY ACHIEVEMENTS DURING THE YEAR

➤ **Licensing/Consent of Nuclear Power Projects/ Fuel Cycle Facility**

- ❖ Permission for erection of Inner Containment dome liner for RAPP-7.
- ❖ Construction consent to NFC-Kota.
- ❖ Clearance for Excavation of KKNPP-5&6 and GHAVP-1&2.

➤ **Renewal of Licences of Nuclear Facilities**

- ❖ Licences for operation of 4 nuclear power plants viz. NAPS-1&2, KGS-3&4, KKNPP-1&2, KAPS-1&2.
- ❖ Licences for operation of FBTR & IFSB and CORAL, IGCAR.
- ❖ Licences for operation of nuclear facilities viz. HWP-Hazira, VSSP at HWP-Tuticorin, Narwapahar Mine, Tummalapalle mine, Banduhurang mine, Bhatin mine, Turamdih mine, Turamdih mill and IREL, Udyogamandal.

➤ **Licensing/Consent of Radiation Facilities**

- ❖ 17,557 Licences for medical, industrial and research radiation facilities.
- ❖ 3,626 Approvals of Radiation Safety Officers (RSO).
- ❖ 4,528 Permissions for procurement of radioactive sources and 1,205 permissions for procurement of equipment/devices.
- ❖ Licence for operation to the Proton Therapy Facility, which is first such facility in the country.
- ❖ 61,488 diagnostic X-ray equipment registered in eLORA as on December 31, 2018.

➤ **Regulatory Inspection of Nuclear and Radiation Facilities**

- ❖ On-site observers posted at four NPP sites (Rawatbhata, Kalpakkam, Kakrapar and Kudankulam) and reviewed the reports submitted by observers on daily basis for generating important inputs for safety review and regulatory inspections.
- ❖ 30 inspections of nuclear power projects and 78 inspections of operating power plants.
- ❖ 51 inspections of industrial and fuel cycle facilities.
- ❖ 910 inspections of medical, industrial and research radiation facilities.
- ❖ A special inspection of FRFCF, IGCAR was carried out to assess the nature of construction safety management after a fatal accident.

➤ **Enforcement Inspections**

- ❖ Enforcement inspection campaign of Medical Diagnostic X-Ray units in Mumbai and major cities of Gujarat and Kerala state (141 enforcement inspections).

➤ **Emergency Preparedness and Response (EPR) at NPPs**

- ❖ First full-fledged routine off-site command and control emergency exercise conducted at Rawatbhata Site.
- ❖ Special regulatory inspections on emergency preparedness at NPP carried out.
- ❖ Off-site Emergency Exercise at 3 NPP sites and site emergency exercises at two NPP sites observed.
- ❖ Design review of On-Site Emergency Support Centres at NPPs completed.

➤ **Regulatory Safety Documents**

- ❖ One Safety Guide revised and uploaded on website.
- ❖ Three draft safety standards and seven document preparation profiles (DPP) of IAEA reviewed and commented.

➤ **Safety Analysis and Research Development**

- ❖ Hydrogen mitigation facility (HYMIF) commissioned at SRI, Kalpakkam and parametric experimental studies in progress.
- ❖ Core Melt Retention Facility (COMREF), Coolant Channel Heat-up and AGMS Facility and Water and Steam Interaction Facility set up at SRI.
- ❖ Experiments on power and control cable fires conducted in the Compartment Fire Test Facility (CFTF) at SRI.
- ❖ Under safety research programme to promote research in nuclear, radiation and industrial safety, five new projects were approved and renewed approvals for four ongoing projects.

➤ **Public Information and Safety Promotional Activities for Stakeholders**

- ❖ Two Theme meetings organized for stakeholders of NPPs.
- ❖ In a first-of-a-kind initiative, two training cum awareness programmes on ‘Security of Radioactive Sources at Radiation Facilities’ organised for Police officials in Maharashtra.
- ❖ 2nd National Conference on Regulatory Interface (NCRI) to obtain feedback/suggestions from NPP stakeholders was held.
- ❖ Ten awareness programmes conducted on radiation safety covering wide target audience.
- ❖ Exhibits on the safety and regulatory aspects of nuclear and radiation facilities in conferences/workshops displayed.
- ❖ Safety and regulatory requirements of X-ray facilities through Radio Jingle in FM stations of major cities were broadcasted.
- ❖ Advertisement on regulatory requirements for handling of ionising radiation sources in major newspapers published.
- ❖ Advertisements in Scientific Journals/Technical magazines & Newsletters.

➤ **International Cooperation**

- ❖ Workshop on ‘Aircraft Impact Assessment (AIA)’, under bilateral Arrangement between AERB and USNRC was organised.
- ❖ Bilateral meeting between AERB and USNRC, providing an opportunity and platform for sharing of regulatory experiences, recent initiatives in R&D activities for mutual benefit was organised.
- ❖ Under aegis of IAEA, participation in Coordinated Research Project (CRP) on ‘Probabilistic Safety Assessment of Multi-Unit Nuclear Power Plant Sites – An Integrated Approach’.
- ❖ Bilateral arrangement between the AERB and the Office for Nuclear Regulation (ONR) of Great Britain for exchange of information and cooperation in the area of regulation of nuclear energy use for peaceful purposes was signed.
- ❖ Bilateral arrangement between AERB and USNRC was renewed, it will enable, among other things, exchange of technical information, co-operation in safety research and training of regulatory staff.
- ❖ Participation of AERB experts in the IAEA IRRS missions to review activities regulated by Australian Radiation Protection and Nuclear Safety Agency (ARPANSA), Australia and Federal Ministries of Vienna, Austria.

➤ **Public Accountability**

- ❖ 117 RTI questions replied during the period.
- ❖ Responded to 41 parliamentary questions.
- ❖ Replied all grievances pertaining to AERB through Centralized Public Grievance Redress and Monitoring system (CPGRAMS) portal in time.

➤ **Human Resource Development**

- ❖ Augmentation of manpower by recruiting 8 personnel in various categories.
- ❖ Organised one Management Development Programme (MDP) for middle level officers (SO/F) towards development of soft skills.
- ❖ Towards continual knowledge upgradation of its staff, AERB organized:
 - Training on ‘Human Factors’ in two batches for AERB officers.
 - AERB Course on Regulatory Processes (ACRP) for Competency Enhancement on different topics.
 - Three technical talks and four colloquia covering various topics of nuclear, radiation and industrial safety.

➤ **Infrastructure Development**

- ❖ Video conferencing systems installed and made operational at AERB headquarter and SRI office at Kalpakkam.
- ❖ The implementation of e-Office in progress.
- ❖ Eastern Regional Regulatory Centre (ERRC), Kolkata building nearing completion.
- ❖ New building of Southern Regional Regulatory Centre (SRRC), Chennai inaugurated on November 29, 2018 and SRRC started functioning from there.
- ❖ Work order for construction of Niyamak Bhavan-C building at AERB Headquarter issued.

➤ **Promotion of Official Language**

- ❖ Hindi Meet on ‘Experience Feedback from ACPSR & Associated Groups involved in Safety Review of Kudankulam Atomic Power Units - 1&2’.
- ❖ Five press releases issued in Hindi and published in daily newspapers.
- ❖ Four Hindi workshops conducted.
- ❖ 18,142 bilingual letters sent and 106 sent exclusively in Hindi.
- ❖ AERB officer awarded with ‘HINDI SEVI SAMMAN’ for the year 2017-18 for promotional /outstanding contribution in the field of official language Hindi.

➤ **Special Activities**

- ❖ Signed MoU with Govt. of Andhra Pradesh and Karnataka for setting up the Directorate of Radiation Safety (DRS) to spread awareness on radiation protection, safety regulations through training and awareness programmes.

➤ **New Initiatives**

- ❖ **Accreditation of Laboratories:** In 2017, initiative was taken to bring out clarity of roles of NABL, AERB and BARC w.r.t. recognition/accreditation procedures for testing and calibration in radiological measurements. Subsequently, an arrangement between NABL and AERB was formally accepted on October 9, 2018 with that, AERB would discontinue issuance of accreditation/recognition in a phased manner to facilitate seamless transfer of the activities to NABL and restrict AERB's role to oversee radiological safety in such laboratories like other radiation facilities and issuance of licence to laboratories for operation of radiation sources from radiological safety stand point.
- ❖ **Transport of Radioactive Material by Air:** In 2017, AERB reviewed IAEA regulations for safe transport of radioactive material, Specific Safety Requirements, SSR-6, 2012 edition vis-a-vis national legislation. It was concluded that Directorate General of Civil Aviation (DGCA) is the competent authority in India with absolute jurisdictions to regulate the safe transport of all kind of dangerous goods including radioactive material by air to, from, within or over India including in-transit storage at the airports, whereas role of AERB is limited to issuance of shipment approval and to grant import and export permission for radioactive consignments. This conclusion by joint task force was formally accepted by AERB and DGCA.
- ❖ **Command and Control Exercise:** A first full-fledged off-site command and control emergency exercise was conducted at Rawatbhata Site (RR Site) on December 15, 2018 to test the decision making capabilities of the responders and to assess the actual response time taken considering prevalent environmental parameters.