

International Conference on Research Reactors: Safe Management and Effective Utilization

16-20 November 2015

Vienna, Austria

Conclusions and Recommendations

Session A: Utilization and Application

1. The Conference notes that there are many research reactors that are effectively used for a variety of purposes, but that there are also many that have a low utilization factor and are not utilized to their full potential. Proper strategic planning is necessary to enhance utilization of such facilities. Member States are urged to make use of IAEA services available to support strategic planning and implementation.
2. Increased use of networking and participation in regional coalitions has been shown to be effective in improving transfer of knowledge and experience from one installation to another. An example is the Eastern European Research Reactor Initiative (EERRI). Bilateral agreements between institutions can also be effective. The IAEA offers assistance in creating and maintaining such coalitions, and Member States are urged to take advantage of this assistance.
3. Several well-developed facilities for neutron science and testing can make their capacity available to scientists from other countries, in some cases at no cost. It is therefore recommended that the IAEA expand the RRDB to include a list of facilities offering confirmed access for various types of research reactor utilization, such as imaging, neutron beam techniques, material testing and NAA.
4. The Conference recognizes the important role of the IAEA in coordinating and providing support to Member States in the production and supply of radioisotopes. This support should continue expanding on regional-international cooperation and joint actions to facilitate reliable availability of the widely used radioisotopes produced in research reactors. Furthermore, the Conference recommends that the IAEA provide enlarged assistance covering entire radioisotope production-supply chain, from the preparation and irradiation of the targets, through the processing, waste management, quality control and assurance and regulatory issues.

Session B: Common Management Considerations

5. The Conference notes the importance of integrated management of all activities in the research reactor organization. All research reactor operating organizations are encouraged to make use of the Agency's documentation and services to ensure that safety and security and their interface are properly integrated into their management system.
6. There is increasing recognition in the Member States of the need for effective coordination of the interface between safety and security in all research reactor activities throughout the life cycle of the facility. It is essential that measures in security do not unduly impact measures in safety and vice versa. The Agency is requested to continue its efforts in providing support to Member States in this area.
7. Several challenges for TRIGA reactors were noted, including continued supply of new fuel in the long term, back-end options for spent fuel and high-level technical support from that original reactor manufacturer. TRIGA operators are urged to strengthen regional and global cooperation to address these issues, enhance effective utilization and improve relations with stakeholders. The IAEA is asked to use its good offices to foster this cooperation.
8. The Conference notes the effective coordination of the IAEA's cross-cutting activities for research reactors, and encourages the Agency to continue to work toward integration, harmonization and synchronization of these activities to maximize the benefits to the Member States.

Session C: Safety of Research Reactors

9. The Conference appreciates the significant progress that has been achieved in IAEA activities on safety of research reactors, including supporting application of the Code of Conduct on the Safety of Research Reactors, development of Safety Standards, supporting their application and conducting safety reviews. These activities should continue for the benefit of Member States. It is recommended that Member States take advantage of safety review services, especially the Integrated Safety Assessment of Research Reactors (INSARR) service. In addition, it is recommended that the Agency continue to support establishment of an adequate regulatory and safety infrastructure in Member States planning to acquire their first research reactor.
10. Many research reactor organizations have performed safety reassessments in light of the lessons learned from the Fukushima-Daiichi accident, with the objective of improving their ability to withstand extreme external events. Member states that have not yet performed safety reassessments are encouraged to do so.

11. The Conference recommends that the IAEA continue its efforts to disseminate the relevant lessons learned from the Fukushima-Daiichi accident and to support Member States to address them through implementation of technical meetings, workshops, peer review and advisory missions. It also recommends that the lessons learned be considered in design of new research reactors.
12. Member States are continuing to address aging of research reactors through implementation of a systematic aging management program based on the IAEA Safety Standards, including refurbishment and modernization activities. The Conference recognizes the IAEA Research Reactor Ageing Management Database (RR-AMDB) as an important information resource for Member States and encourages Member States to contribute information to the database to strengthen it for all. The Conference recommends that Agency support continue in aging management.
13. Several Member States have initiated a process of periodic safety review (PSR) for research reactors, although there is no current Agency guidance. The Conference recommends that the Agency develop such guidance and support Member States in establishment of a PSR process on the basis of experience from similar processes for nuclear power plants.

Session D: Operations and Maintenance

14. The Conference appreciates the Agency's activities in support of research reactor operations and maintenance, including aging management and establishment of an integrated management system. It is recommended that Member States avail themselves of the opportunity to request an Operations and Maintenance Assessment of Research Reactors (OMARR) review of the O & M activities implemented in the facility.
15. The Conference appreciates the progress that has been made in conversion of research reactor cores from HEU to LEU fuel, and the accompanying fuel development work. Continued work on development of fuels suitable for high-performance research reactors is needed. The support of the Agency with coordination and expertise is appreciated, and it is recommended that it continue.

Session E: Spent Fuel Management and Decommissioning

16. The Conference recognizes that decommissioning planning is necessary and that it should start as soon as possible, even in the design of a new research reactor. It is recommended that the Agency continue to assist Member States in developing decommissioning plans and providing the platform for related information exchange. It should also provide the necessary support such as through a Technical Cooperation programme. It is also recommended that Member States having a research reactor in extended shutdown decide whether to restart or decommission without unnecessary delay.

Session F: New Research Reactor Projects

17. The Conference recognizes that the IAEA-developed Milestone Approach and supporting technical documents and Safety Standards provide a valuable guidance to Member States planning and implementing new research reactor projects. Such documents are well known and used by Member States. It is recommended that IAEA guidance on the preparation of a feasibility study for a new or first research reactor project be finalized as soon as possible. The Conference also recognizes the value of the newly established Integrated Research Reactor Infrastructure Assessment (IRRIA) mission and urges the IAEA to implement this service as soon as possible.
18. It is recognized that building a new research reactor is a national decision and that the Agency is ready to assist Member States in all stages of such projects. Newcomer Member States are also encouraged to consider accessing existing well-utilized research reactor facilities to build their national nuclear capacity. Also, the recently IAEA-developed ICERR scheme can be a valuable tool to share competences among experienced and newcomer Member States for nuclear capacity building and R&D projects.

Session G: Security of Research Reactors

19. The Conference notes that nuclear security for research reactors now has a well-defined structure. However, there are areas which need to be further defined and explained from the implementation perspective. It is recommended that IAEA guidance be developed on: vital area identification; definition of unacceptable radiological consequences; the interfaces between nuclear safety and nuclear security design; evaluation analysis and contingency versus emergency response; cyber security threats and protective measures for research reactors; and determining trustworthiness of research reactor employees and visitors.