

IAEA Programme and Activities on Research Reactor Safety 2015 Update

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Research Reactor Safety Section
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- Research reactor (RR) safety issues and trends
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Overview of RRs Worldwide

Built to date: ~ 700

Operational	234
Temp. shutdown	13
Shutdown	142
Decommissioned	298

Under construction/planned:
Argentina, Belgium, Brazil, France, Indonesia, Jordan, Korea, Kuwait, Lebanon, Netherlands, Saudi Arabia, Sudan, Tanzania, Tunisia, UAE, Vietnam.

Information taken from the IAEA Research Reactor Database (RRDB)



Region	Operational Research Reactors
Africa	10
Americas	66
Asia/Pacific	52
Europe	106



Department of Nuclear Safety and Security

Vision: To provide a strong, sustainable and visible global nuclear safety and security framework, working to protect people, society and the environment from the harmful effects of ionizing radiation.

Department of Nuclear Safety and Security (NS)

Division of Nuclear Installation Safety (NSNI)

Research Reactor Safety Section (RRSS)

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Safety Issues and Trends

RRSS identifies safety issues and trends and plans future activities on the safety of research reactors accordingly.

Statistics on the Root Causes of the events reported to the IRSRR

Root Cause	Percentage
Human factors	31%
Design, Construction, Commissioning	12%
Aging	16%
Other	39%

Safety areas needing improvement as indicated by Member States participating in the 2014 International Meeting on Application of the Code of Conduct on the Safety of Research Reactors

Safety Area	Number of Member States
Financial and Human Resources	15
Decommissioning Planning	14
Emergency Preparedness	13
Assessment of Safety	12
Safety Culture	11
Regulatory Supervision	10
Human Factors	9
Quality Assurance	8
Ageing Management	7
Extended Shutdown	6
Radiation Protection Programme	5
Siting	4
Design, Construction, Commissioning	3

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IAEA Activities on RR Safety

- Developing Safety Standards supporting publications;
- Conducting safety review services;
- Disseminating operating experience feedback from the Incident Reporting System for Research Reactors (IRSRR);
- Monitoring and enhancing the safety of RRs under Project and Supply Agreements;
- Providing training activities and forums for exchanging information;
- Organizing coordinated research projects (CRPs);
- Fostering networking for safety enhancements;
- Supporting countries establishing a first/new RR.

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IAEA Safety Standards

Fundamental Safety Principles covering all circumstances that give rise to radiation risks

Safety Requirements that must be met to ensure the protection of people and the environment

Safety Guides providing recommendations and guidance on how to comply with the safety requirements and achieve high levels of safety

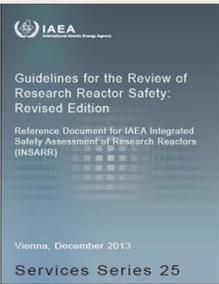
IAEA Safety Standards: <http://www-ns.iaea.org/standards/default.asp?s=11&l=90>



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Safety Review Services

- Conducting Integrated Safety Assessment of Research Reactors (INSARR) and other safety review missions, and assisting with implementation of the recommended safety enhancements.



Vienna, December 2013
Services Series 25



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Dissemination of Feedback from IRSRR

- RRSS operates the IRSRR to collect, analyse, maintain and disseminate information received from 57 participating Member States on unusual events that have occurred at research reactors.
- RRSS organizes regular meetings for exchange of operating experience feedback and lessons learned from events.
- An IAEA TECDOC on operating experience feedback from IRSRR is in printing.



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RRs Under Project and Supply Agreements

- 23 countries operating 27 research reactors under Project and Supply Agreements with the IAEA.
- Monitoring and enhancing safety of research reactors under Project and Supply Agreements:
 - Collecting, analysing, and disseminating the results of Safety Performance Indicators;
 - Regular meetings on the safety of the research reactors under agreements. The next meeting is planned for first half of 2015.



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Training and Information Exchange

- More than 40 national and regional training workshops and technical meetings were conducted since 2010, focusing on identified common safety issues.
- Major meetings in 2015
 - International Conference on Research Reactors: Safe Management and Effective Utilization, 16-20 November 2015, Vienna;
 - Technical Meeting for the National Coordinators of the IRSRR, Vienna, March 2015;
 - Technical Meeting for research reactors under project and supply agreements, June 2015;
 - Workshop on managing the interface between safety and security of research reactors, June 2015.



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Coordinated Research Projects

- CRPs are conducted jointly with other IAEA Departments as research reactor cross-cutting activities.
- Benchmarking computer codes for fuel burnup and material activation in RRs.
 - Establishing a database of core structural materials for ageing management of RRs.
 - Benchmarking neutronics and thermal-hydraulics computer codes for RRs.



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Networking for Safety

- Supporting the functioning of the Global Nuclear Safety and Security Network:
 - Asian Nuclear Safety Network;
 - Arab Network of Nuclear Regulators;
 - Forum of Nuclear Regulatory Bodies in Africa.
- Facilitating establishment and supporting the functioning of regional Advisory Safety Committees for Research Reactors in Africa, Asia and the Pacific and Europe regions;
- Supporting the implementation of more than 25 national and regional technical cooperation projects.



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Supporting New RR Projects

- Advisory services and expert missions.
- Meetings and training workshops;
- Publications;



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Future Challenges

- Maintaining and expanding worldwide application of the Code of Conduct and the IAEA safety standards;
- Enhancing the safety of research reactors considering the feedback from the Fukushima Daiichi accident;
- Strengthening regulatory infrastructure and capabilities;
- Establishing the necessary safety infrastructure for Member States planning to build their first research reactor;
- Maintaining adequate safety levels for ageing research reactors;
- Sustaining and improving international networking for sharing knowledge, experience and good practices.



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Thank You for Your Attention.



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