



Workshop on Application of the Code of Conduct on the Safety of Research Reactors

Module 3 – The Role of the State in RR Safety

L.3.1.C - Legal and Governmental Infrastructure for Research Reactors: Financial and Human Resources for the Regulatory Body and the Operating Organization & International Cooperation

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Office of Science Laboratory
Operated by The University of Chicago



L.3.1.C - Legal and Governmental Infrastructure for RRs: Financial and Human Resources for the Regulatory Body and the Operating Organization & International Co-operation

- **Root Causes of Safety Issues Addressed in the Code**
 - Inadequate **Regulatory Supervision**
 - *Lack of the State's commitment to meet international standards*
 - *Insufficient Resources*
 - Staffing
 - Training
 - Expense to conduct business
 - Research Reactors **Shutdown but not being Properly Decommissioned**
 - *Insufficient resources to either continue operation or decommission*
 - *Lack of utilization*
 - Insufficient resources for necessary staff and equipment
 - Lack of interest
 - *Resources not planned and accrued or diverted to other choices*
 - Overall **Safety Culture**

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- **Solutions to Root Causes Identified**
 - Additional **resources** - “Needs” will always exceed what is available
 - **Technical assistance**
 - **Training** – Give a man a fish, he’s fed for a day; teach a man to fish, he’s fed for a lifetime
 - The **will** to make **good choices**
 - Focus on **safety**
 - Advanced **planning** – E.g. decommissioning, spent fuel disposal, emergency planning

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- **Forms of Assistance**

- IAEA
 - *Technical Cooperation*
 - *Safety Services*
 - *Information Sharing*
 - Safety Standard Series
 - Technical Documents (TECDOC Series)
 - Meetings and Workshops
 - Incident Reporting
 - *Training*
- Bilateral
- Regional

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- **Terms used in the Code Meaning, Implying or Inferring Resources**
 - Resources
 - Human resources
 - Training
 - Finance
 - Make available
 - Support
 - Provide
 - Commit
 - Plan
 - Arrangements
 - Co-operation

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- **References in the Code to Resources from [Outside the State](#)**
 - Affirming the importance of [international cooperation](#) for the enhancement of nuclear safety
 - Affirming the importance of the IAEA's safety standards relevant to research reactors that [provide](#) an extensive basis for ensuring their safety
 - 4. The objective of this Code is to achieve and maintain a high level of safety in research reactors worldwide through the enhancement of national measures and [international co-operation](#) including, where appropriate, safety related technical co-operation.
 - 10. The State should have a regulatory body charged with regulatory control of research reactors based on the national legal structure ... If necessary, assistance in developing the necessary human, technical and regulatory capabilities should be obtained through [international cooperation](#).

L.3.1.C - Legal and Governmental Infrastructure for RRs: Financial and Human Resources for the Regulatory Body and the Operating Organization & International Co-operation

- **References in the Code to Resources from Outside the State**
 - 36. The IAEA Secretariat should:
 - (b) **assist** States, upon their own request, in application of this Code;
 - (c) continue to collect and **disseminate information** relating to the safety of research reactors, **provide** safety review services, **develop** and **establish** relevant technical standards and **provide** for the application of these standards at the request of any State by advising and assisting on all aspects of the safe management of research reactors.



L.3.1.C - Legal and Governmental Infrastructure for RRs: Financial and Human Resources for the Regulatory Body and the Operating Organization & International Co-operation

- **References in the Code to Resource Considerations within the State**
 - 8(b) “extended shutdown” means the state in which the reactor has been shutdown and for which there are no approved plans and committed resources in place to resume operation or enter decommissioning
 - 9. The State should establish and maintain a legislative and regulatory framework to govern the safety of research reactors. The framework should place the prime responsibility for the safety of research reactors on the operating organization and should provide for:
 - (a) the establishment of applicable national safety requirements and regulations;
 - (b) the enforcement of applicable regulations and the terms of authorizations, including suspension, modification or revocation of the authorization.
 - (c) a system of regulatory inspection and assessment of research reactors to ascertain compliance with applicable regulations and the terms of authorizations; and
 - (d) the enforcement of applicable regulations and the terms of authorizations, including suspension, modification or revocation of the authorization.

L.3.1.C - Legal and Governmental Infrastructure for RRs: Financial and Human Resources for the Regulatory Body and the Operating Organization & International Co-operation

- **References in the Code to Resource Considerations within the State**
 - 11. The State should **provide** the regulatory body with the necessary authority and adequate resources to ensure that it can discharge its assigned responsibilities...
 - 13. The State should ensure that the operating organization has a **system for financing** the **safe operation** of the research reactor, for maintaining the research reactor in a **safe shutdown state** for extended periods if this becomes necessary, and for its **decommissioning**.
 - 17. In circumstances where a research reactor is in extended shutdown and there is no longer any effective operating organization, the State should make **arrangements** for the safe management of the research reactor.
 - 20. The regulations and guidance established by the State or the regulatory body according to national **arrangements** should:
 - (a) require clear **arrangements** for the management of safety by the operating organization, reflecting safety as the highest priority and encouraging the development of a strong nuclear safety culture in the operating organization;

L.3.1.C - Legal and Governmental Infrastructure for RRs: Financial and Human Resources for the Regulatory Body and the Operating Organization & International Co-operation

- **References in the Code to Resource Considerations within the State**
 - 20. (continued)
 - (d) require the operating organization to demonstrate that it has sufficient financial and human **resources** to support safe operation of the research reactor;
 - (e) require those personnel who operate the research reactor and for experimenters who use associated experimental facilities to be appropriately **trained**;
 - (j) establish criteria for intervention in emergencies, and require that adequate emergency **plans** be in place;
 - 23. The operating organization should ensure that there is an overall effective system for the **financing** of the safe operation of the research reactor, including for any extended shutdown state, and for **decommissioning**.
 - 24. The operating organization should make available sufficient numbers of staff qualified through appropriate education and **training** (initial and ongoing) for all safety related activities throughout the life of the research reactor. Appropriate **training** should be provided for experimenters that will use associated experimental facilities.

L.3.1.C - Legal and Governmental Infrastructure for RRs: Financial and Human Resources for the Regulatory Body and the Operating Organization & International Co-operation

- **References in the Code to Resource Considerations within the State**
 - 29. The operating organization should establish, and maintain by training and exercises, appropriate emergency **plans** in accordance with established criteria of the regulatory body, and in co-operation with other appropriate bodies, to provide an effective response to emergencies.
 - 35. The operating organization should prepare a comprehensive decommissioning **plan** and assessment of environmental impact for review and approval by the regulatory body prior to commencing decommissioning activities. The elements of the **plan** should include:
 - (c) **arrangements** for dealing with the fuel and radioactive waste arising from the research reactor;
 - (d) **arrangements** for radiation protection during the decommissioning process;

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- **Conclusions**

- International cooperation is committed and available
- Resources are always limited
- Choices are required
- Safety focus in choices is expected
- Planning is necessary
- Wise choices are critical