

Fact Sheet on Spent Fuel Management

What are the issues?

The production of nuclear electricity results in the generation of spent fuel that requires safe, secure and efficient management. Appropriate management of the resulting spent fuel is a key issue for the steady and sustainable growth of nuclear energy. Currently about 10,000 tonnes heavy metal (HM) of spent fuel are unloaded every year from nuclear power reactors worldwide, of which 8,500 t HM need to be stored (after accounting for reprocessed fuel). This is the largest continuous source of civil radioactive material generated, and needs to be managed appropriately. Member States have referred to storage periods of 100 years and even beyond, and as storage quantities and durations extend, new challenges arise in the institutional as well as in the technical area.

How can IAEA spent fuel management activities address these issues and benefit Member States?

The IAEA gives high priority to safe and effective spent fuel management. As an example of continuing efforts, the 2003 International Conference on Storage of Spent Fuel from Power Reactors gathered 125 participants from 35 member states to exchange information on this important subject. With its large number of Member States, the IAEA is well-positioned to gather and share information useful in addressing Member State priorities. IAEA activities on this topic include plans to produce technical documents as resources for a range of priority topics: spent fuel performance assessment and research, burnup credit applications, cask maintenance, cask loading optimization, long term storage requirements including records maintenance, economics, spent fuel treatment, remote technology, and influence of fuel design on spent fuel storage. In addition to broader topics, the IAEA supports coordinated research projects and technical cooperation projects focused on specific needs.

Success Stories:

The proceedings of the 2003 IAEA conference on storage of spent fuel from power reactors has been ranked in the top twenty most accessed IAEA publications. These proceedings are available for free downloads at <http://www-pub.iaea.org/MTCD/publications/PubDetails.asp?pubId=6924>].

The IAEA organized and held a 2004 meeting focused on long term spent fuel storage provisions in Central and Eastern Europe, using technical cooperation funds to support participation by these Member States. Over ninety percent of the participants in this meeting rated its value as good or excellent, with participants noting that the IAEA is having a positive effect in stimulating communication, cooperation, and information dissemination on this important topic.

The IAEA was advised in 2004 that results from a recent coordinated research project (IAEA-TECDOC-1343) were used by one Member State to justify higher clad temperatures for spent fuel in dry storage, leading to more efficient storage and reduced costs.

Looking ahead:

Long term storage of spent fuel is becoming a progressive reality. Feedback from Member States has reinforced IAEA plans to prioritize activities on gathering and disseminating information on the performance of fuels and materials in storage and burnup credit applications. The IAEA will continue to address global spent fuel data, technical considerations as storage durations extend, spent fuel treatment options, among others. Specific items include -

- An international spent fuel conference in Vienna 19-23 June 2006;

- The Nuclear Fuel Cycle Information System is a computerized database designed to provide information on civilian nuclear fuel cycle facilities worldwide. This on-line system is frequently updated and accessible at http://www.iaea.org/OurWork/ST/NE/NEFW/nfcms_b4_03_NFCIS.html.
- On-going activities in spent fuel management are listed and updated on the IAEA website. Further information on these activities can be accessed at http://www.iaea.org/worldatom/Programmes/Nuclear_Energy/NEFW/nfcms_b3.html.

For more information please contact:

C. Ganguly, Section Head (Email. C.Ganguly@iaea.org) or W. Danker (Email. W.Danker@iaea.org)