

Opening remarks by President

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2010-05-31

Let me begin by thanking IAEA for the invitation to preside over this Conference. Management of spent fuel from nuclear power reactors is an issue that has been engaging international attention since long. There are differing dimensions to management of spent fuel depending on the national policy with respect to fuel cycle, methods adopted for storage and disposal and emerging understanding. This conference is an excellent opportunity for us to exchange our experiences, scientific knowledge and ideas on a large number of issues that are involved and develop common understanding and derive appropriate conclusions. The organizers have worked out a comprehensive and well structured programme for us. With such a wide participation in the conference, we should be in a position to enrich ourselves with broader perspective and reach some useful conclusions arising out of our discussion.

There have been debates on whether spent fuel from nuclear power reactors is a waste or a resource. Now there is widespread talk on renaissance in nuclear power. Will it really take place? If it does, how far can we go on the basis of open nuclear fuel cycle. What are the implications in terms of spent fuel management issues. There are also issues related to permanent disposal of spent fuel and indeed of long lived radioactive waste. Considerations of energy security, size of national programme, national policies etc. have led to differing choices in terms of open or closed fuel cycle. Considerations of security and proliferation add to further complexities. Questions are being raised about sustainability of nuclear power in a once through fuel cycle mode. The national policies with respect to open or closed fuel cycle could well be influenced by the shape of things to come in respect of international consensus on nuclear fuel cycle and waste management issues. Our deliberations at this conference are therefore very important.

Perhaps the most important aspect of this conference would be the exchange of opinion on scientific understanding of issues involved in long term storage of spent fuel and their safety implications. What are the relative considerations? We need to also understand if there are additional issues involved with high burn up fuel. Are there limits in terms of time for retrievable disposal? Safety management practices with respect to storage, transport and disposal of spent fuel have evolved over a period. Are the current codes and standards adequate? Do we have adequate actions in place to address legacy issues? Are we happy with the current level of international cooperation in safety of spent fuel management? Can it be intensified further? How are the international information system and incidence reporting system working? With emerging multilateral arrangement for management of spent fuel, are there specific safety management issues? Do we need greater harmonization of practices of spent fuel management in case multilateral arrangements become a reality?

Transportation of spent fuel especially on a large scale and over long distances needs our careful attention. We need to discuss all issues involved including those involved in international transport. Should a global mechanism be established in transport regulation to facilitate certification for long periods? Relative aspects of transportation with respect to centralized or decentralized spent nuclear fuel management may also merit some deliberation. There is perhaps a need to develop clarity on relative disposition of reprocessing facilities vis-à-vis nuclear power plants in case of closed fuel cycle.

With oncoming of Fast Breeder Reactors which are likely, we will be dealing with spent fuel that has gone through a much high level of irradiation in the reactor. The heat management with these fuels is also a matter that needs greater attention. Spent fuel management with fast reactors and reprocessing are

likely to be closely linked. I am glad that some of the aspects related to reprocessing would be deliberated upon. Reprocessing of fast reactor fuel elements could also follow non-aqueous route in future. The management of spent fuel in closed fuel cycle has several alternate routes which we need to understand both in absolute and relative terms.

It seems to me that world is heading towards an energy crises and also a crises in terms of climate stability. International consensus that facilitates spent fuel management in a safe manner, particularly through closed fuel cycle, would go a long way in resolution of both these crises. We are well aware that this is a complex issue, in which technical and political aspects are thoroughly intermixed. I think it is up to us the scientific community to bring in greater clarity and guide the political process rather than the other way around. We need global approaches and mechanism that lead to safe and secure nuclear energy world wide. Can we think of a dual track where there is growth of nuclear energy potential through Plutonium – uranium cycle in fast reactors in a secure way and there is spread of nuclear energy throughout world through proliferation resistant systems.

Long term disposal of long lived waste has always been a matter of concern in public mind. Convincing public about the safety of repositories over a time frame that is orders of magnitude larger compared to human life span or even the institutional life span is an issue difficult to resolve. We must share our experiences and insights into this problem. There is also talk about reducing the radiotoxicity of high level waste to a level comparable with what exists naturally say in a uranium mine, in a reasonable time span of say around 300 years. What is our current collective scientific thinking and technological readiness in this regard? What road map needs to be followed to realize such an object? Are there opportunities for international cooperation in this area. We need to reach an international understanding on the way forward.

There are international instruments with respect to spent fuel management. What is the experience so far? What is the status of international cooperation in respect of science and technology related to spent fuel management. Are there further opportunities?

Security and proliferation concerns with respect to spent fuel storage, management and disposal are an important area for national and international action. The levels of proliferation concerns differ depending on whether open or closed fuel cycle is being adopted. Even in case of open fuel cycle there may be long term security issues arising out of the ease with which plutonium can be recovered by future generations after a good part of radioactivity in the spent fuel is decayed. What about development of proliferation resistant technologies. What is the current status? Do they offer comfort in terms of proliferation and security risks? Do they lead to greater technological complexities making nuclear energy unviable? Does thorium offer advantages in terms of proliferation resistance?

Dear participants, we have a very broad range of issues to discuss in this conference. The conference organizers have identified a number of issues where we expect we need to reach conclusions for further action. Presentations of DDG/IAEA Mr. Sokolov, Mr. Yoshimura of OECD and Mr. Graft of GNS, Germany which we just heard have also put forward some additional points. Let us use our time at this conference to discuss these and several other related issues and aim at deriving appropriate conclusion both with regard to our collective understanding of strategies as well as with respect to the needs and priority for international cooperation in this important area. I look forward to carefully listening to our deliberations and the summary and conclusions from each session.