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RADIOACTIVE WASTE:

PHYSICAL, TECHNOLOGICAL, AND SOCIAL REALITIES

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Thank you, Director-General, for that introduction. Good morning, ladies and gentlemen. I would like to echo the welcome from Dr. ElBaradei, and to thank the International Atomic Energy Agency for inviting me to host this scientific forum on what may be the most perplexing topic in nuclear technology today: the management of radioactive waste.

CORE ISSUES: A THUMBNAIL SKETCH

I would like to begin with a thumbnail sketch of the current scene, focusing on three "realities" that, in my view, form the core of this dialogue: (1) the physical reality; (2) the technological reality; and (3) the social reality.

The Physical Reality: A Continuing Build-Up

The physical reality is simple: waste exists, and the volume of waste continues to build. After 4 decades of generating nuclear energy, we have yet to construct and operate successfully a permanent geological repository, in any country, that can receive spent fuel or other high-level wastes. At the end of 1999, the build-up of spent fuel stood at approximately 145,000 tons, with most of that (roughly 100,000 tons) remaining in wet or dry storage at its point of origin — that is, at 236 nuclear power facilities in 36 countries.

The crux of this "reality" is that our dialogue today and tomorrow will not be a theoretical exercise. Until feasible solutions are in demonstrated and operational, the problem will continue to grow. When policy makers and elected officials postpone dealing with waste disposal concerns, their postponement is, in fact, a decision in itself — a decision to place an ever-increasing burden on the shoulders of those who follow.

The Technological Reality: Effective Interim Solutions

The technological reality is more encouraging. Forced to deal with the lack of near-term solutions for permanent disposal, the scientific community has continued to invent more stable waste forms, improved storage and transport containers, new reprocessing strategies, and — as we will hear this afternoon — novel approaches to partitioning and transmutation of long-lived radioactive species. In a similar fashion,

national regulators and international bodies have continued to devise sensible safety standards commensurate with these emerging technologies.

The beneficial outcome of these compensatory efforts is that we have a robust array of technologies for safely managing radioactive waste well into the future — even without permanent disposal solutions. These effective interim solutions must be viewed as limited successes, however, because they only postpone dealing with both the physical and social realities.

The Social Reality: A Gap in Perception

The social reality is characterized by a significant gap in perception between the scientific community, in general, and the public at large. Most scientific and technical experts agree that permanent disposal can be achieved safely in stable geological formations — such as granite formations or solid salt domes — which have remained undisturbed for hundreds of millennia. The public, however, remains unconvinced.

Several factors help to explain this gap in perception. Nuclear science itself is complex, and the multiple classification systems and regulatory schemes associated with radioactive waste add to that complexity, making the basic topic seem mysterious and inaccessible to the average lay-person. Projections of human intrusion or natural geological activity over 10,000 years (or, for some countries, over a million years) strain credibility. Moreover, in the historical context of nuclear weapons secrecy, nuclear power accidents, and a general lack of awareness about non-power nuclear applications, many members of the public exhibit an inherent distrust of all things nuclear.

The result of this social reality is a lack of overall political motivation, in many countries, to tackle (much less to champion) the resolution of radioactive waste issues.

KEY QUESTIONS: A PREVIEW

This brief overview of the physical, technological, and social realities encapsulates some of the points of discussion that will merit our attention over the next two days. Each session will focus on identifying answers to key questions that frame the radioactive waste management dialogue.

Today's morning session will focus on setting the scene. What is the overall status of global radioactive waste management? What are the trends, and how do these

trends differ from country to country? And on the national level, what are the elements of an effective strategy for developing a permanent national spent fuel repository?

In the next two sessions, we will shift our focus to the technical and safety aspects of radioactive waste management. What are the necessary elements of an integrated waste management program — and how does this differ for countries that have no nuclear power program? What are the cutting edge technologies, and how might these emerging developments change the waste management picture? How should public and political sensitivities associated with siting or transport issues be addressed? And how can spent radioactive sources be controlled more effectively?

Our last session, tomorrow afternoon, will take the form of a panel, with representatives from a wide range of backgrounds offering their perspectives on the challenges, solutions, and "next steps" to be taken in dealing with radioactive waste. Here, too, we will seek to answer key questions. How can we bridge the gap in perception between the scientific community and the public at large? What concrete, deliberate steps will lead us toward demonstrated waste disposal solutions? What are the elements of an effective international framework for radioactive waste management? How can the IAEA help to cooordinate the efforts of Member States in achieving these solutions?

Once again, I welcome you all to this scientific forum — both as interested listeners and as active participants in the question and answer periods. The Agency has structured each session with ample time for questions and observations from the audience. I encourage each of you to contribute your insights toward making the next two days a period of constructive and meaningful dialogue. Thank you.

[break for podium re-arrangements before introducing the Chair of Session 1]