



Setting the Standard

The IAEA Safety Standards Set the Global Reference

by Laurence Williams

Early in the nuclear age, governments recognised the need for a sound framework to control safety so as to maintain public confidence in the emerging technology. It was believed that an independent safety organisation should be established to develop and enforce the framework's rules and standards. In the UK, this need was reinforced by the Windscale accident in 1957. Shortly thereafter, the Nuclear Installations Inspectorate, the UK regulator, was established.

The concepts of priority to safety, the responsibility of nuclear operators, and the requirement for an independent regulatory authority now stand among key features of IAEA international safety standards and the global Convention on Nuclear Safety. The Convention obliges States to report on and peer review their regulatory and related safety activities with respect to the safety of their civil nuclear facilities.

Over the past decades, major changes have influenced directions of the nuclear industry and elevated issues of safety. The catastrophic Chernobyl accident in 1986 raised public concerns and stimulated concerted international action to strengthen the safety framework. More recently, the terrorist attacks in September 2001 raised the spectre of nuclear terrorism and accelerated efforts to upgrade levels of safety and security for activities involving nuclear and radiological materials.

These and other developments have raised the bar for regulators and everyone involved in the safe application of civil nuclear and radiation technologies. At the same time, they have influenced industry market trends. For one, there has been a reluctance to invest in new plants, which led to regulatory requests for license extensions on the lifetime of existing nuclear plants. Decommissioning nuclear facilities and the management of radioactive waste are other major regulatory challenges, as more facilities are taken out of service and waste storage and disposal take on added urgency. Thirdly, the freeing-up of electricity markets and the privatisation of parts of the industry has made operators

more aware of costs and hence more likely to challenge regulatory decisions that may affect them.

Therefore, the independence and strength of safety regulators has become increasingly important. There are several essential key features that underpin this important role. It is essential that the regulators are responsible to the national legislature but independent from those parts of government that advocate nuclear energy. Their status must be underpinned by law and the financial provision must be adequate, stable and predictable. Regulators also need high calibre, well-trained staff and access to high quality technical support and advice that is independent of the operators. Whilst countries have adopted different forms of regulation depending on their own cultures and legal systems, there are many common features. Several fora now exist for sharing methodologies and exchanging information. On a global basis the IAEA offers a major vehicle for countries to communicate on nuclear safety matters and to develop internationally accepted norms, standards and guidance.

Achieving the Best Practices

For the IAEA, setting and promoting standards for nuclear radiation, waste, and transport safety have been priorities from the start, rooted in the Agency's 1957 Statute. Today, a corpus of international standards are in place that national regulators and industries in many countries are applying, and more are being encouraged and assisted to follow them.

Considerable work is done to keep safety standards updated and authoritative. They cover five main areas—the safety of nuclear facilities; radiation protection and safety of radiation sources; safe management of radioactive waste; safe transport of radioactive material; and thematic safety areas, such as emergency preparedness or legal infrastructures.

Overall, the safety standards reflect an international consensus on what constitutes a high level of safety for protect-

ing people and the environment. All IAEA Member States can nominate experts for the Agency's standards committees and provide comments on draft standards. Through this ongoing cycle of review and feedback, the standards are refined, updated, and extended where needed.

How Binding?

The IAEA's standards constitute a hierarchy of fundamental safety principles, concepts and objectives; requirements; and guides. Although advisory to governments, the standards set requirements that must be met to ensure the protection of the people and the environment, both now and in the future. While safety is a national responsibility, the international standards and approaches to safety aim to promote consistency and facilitate global cooperation and trade. They also help to provide assurance that nuclear and radiation technologies are used as safely as possible.

The IAEA's Statute makes the safety standards binding on the IAEA in relation to its own operations and on States in relation to operations assisted by the IAEA. Any State wishing to enter into an agreement with the IAEA concerning any form of Agency assistance is required to comply with the requirements of the safety standards that pertain to the activities covered by the agreement.

As noted, international conventions also contain similar requirements to those in the IAEA safety standards. Besides the Convention on Nuclear Safety, these accords include the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management; the Convention on Early Notification of a Nuclear Accident; and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency.

The safety standards—when incorporated into national legislation and regulations and supplemented by global conventions and detailed national requirements—set a basis for protecting people and the environment. However, there are special aspects of safety that need to be assessed case by case at the national level. For example, many safety standards, particularly those addressing planning or design aspects, are intended to apply primarily to new facilities and activities. Thus, they may not be fully met at some facilities built to earlier standards. How the IAEA standards are applied to such facilities is a decision for individual States.

A Global Reference Base

A main emphasis today is to establish the standards as a global reference point to promote the application of the best, rather than simply good, safety practices. An Action Plan being prepared for the IAEA Board of Governors pinpoints specific steps designed to reinforce the standards' global applicability.

The work has taken on added importance, as more countries join international safety conventions. One general obligation is that a State must not pursue activities that cause damage to another State, and more specific obligations are set by safety conventions under IAEA auspices.

In important fields, such as the heavily regulated transport industry, for example, the IAEA's standards are entrenched. They are at the heart of the international regulatory regime, well understood and widely implemented. The industry operates within a highly stringent international transport safety regime that is subject to regular review to ensure safety.

In the European Union, the IAEA's standards are serving as a reference base, and those pertaining to radiation safety are widely accepted. The principal aim is to have all countries achieve the highest possible levels of safety.

Attaining the Highest Levels

In much of the world where peaceful nuclear and radiation technologies are used, the levels of nuclear and radiation safety need to be upgraded. Working with its national, regional, and global partners, the Agency is leading efforts to attain wider acceptance and fuller application of its international standards. They complement activities to help countries review and improve the overall management of safety and to promote and put into place a proactive "safety culture".

While safety has improved significantly worldwide in the last decade, global performance is still uneven—that is, it varies from country to country and region to region—and much of the IAEA's work in this area is to upgrade safety practices in all countries to the highest levels. It includes developing legally binding norms, in the form of conventions; promulgating high level safety standards for use by nuclear operators and national regulators; and organizing "safety services"—international peer reviews in which experts visit a given country or facility to observe safety practices, point out weaknesses and submit recommendations meeting best international practices.

Events have shown that safety is a transboundary issue of concern, underlining the need for strong global cooperation in fields of nuclear and radiation technologies. Critical lessons have been learned for setting and communicating future directions. Even the best standards cannot ensure safety if they are not widely and uniformly interpreted and applied to protect people and the environment.

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