ENISS
European Nuclear Installation Safety Standards

ENISS Statement

ENISS call for a new paradigm for Emergency Preparedness and Response (EP&R) arrangements to be proportional to risk

February 2023

Nuclear safety is achieved through the combination of a number of consecutive and independent levels of protection kown as the principle of Defence in Depth (DiD). The DiD principle requires that if one level or barrier of protection were to fail, the subsequent level or barrier would be available. The final 5th DiD barrier to protect people and the environment from harmful effects of ionizing radiation is the emergency response arrangements.

The Chernobyl and the Fukushima nuclear accidents caused numerous evolutions in nuclear safety standards resulting in enhancement of Nuclear Power Plant (NPP) safety at DiD levels 1 to 4 to further reduce the likelihood of accidents involving the release of significant quantities of radiation for operating NPPs (Generation II).

The improved safety design principles lead to significant reduction in the risks of releases of radiation for new designs (Generation III reactors, including SMRs), eliminating postulated severe deterministic effects on and off site, the basis for IAEA emergency response catogrisation.

ENISS members share the view that the basis of EP&R guidance for NPP radiation emergency needs to be reviewed as the risk profile of the existing Nuclear Power Plants (NPP) has significantly changed over the years since Chernobyl, and especially since the Fukushima-Daichi accident, and many first-generation reactors, without containment, have entered the decommissioning phase.

For the emerging global demands for energy and climate crisis requiring zero carbon generation, nuclear reactors can make a significant contribution to achieving the projected targets. The need for social and economic global survival also suggests the risk perception and benefits associated with nuclear energy should be revised.

Maintaining a disproportionate approach to risk in the guidance for Emergency Preparedness and Response (EP&R) results in a number of adverse consequences which lead to significant barriers to the development of NPPs as part of the solution against climate change, e.g. misrepresentation of actual risks, lack of consistency, oversized means implying unnecessary resources and complexity.

ENISS seeks an opportunity to engage in discussions on the development of EP&R guidance that supports the DiD and aligns with current Safety Standards, promotes proportionate planning to risks of releases and is consistent with wider national emergency / contingency planning.

It is suggested the principles within such an approach include:

- plans that are clearly linked to an objective assessment of the risks posed by the facility in its environment. A “one-size fits all” approach for NPP’s is most unlikely to be successful.
- plans that do not exaggerate the radiation risks posed by the facility (potentially leading to unbalanced perception of risk among the public or others who might need to take part in accident response), but which do clearly recognise the importance of non-radiological health impacts[1] and the significance of both prior information and effective communication during an emergency[2].

The outcome should be a European (and ideally a worldwide) approach that is capable of sustaining public confidence and which at the same time conveys a more accurate picture of the risk from radiation in the event of a nuclear site emergency

- plans following an approach that is capable of being applied to a wide range of nuclear facilities – i.e. that addresses the characteristics of both existing and future designs of power stations.
- plans that embody the IAEA fundamental safety principles in all respects and particularly the requirement that emergency plans should be based on risk and not on maximum theoretical consequences irrespective of likelihood.

Furthermore, collaboration between health professionals and the radiation protection community should be fostered to ensure that the way in which the international system of radiation protection is set down takes into account public perception and is not just comprehensible to experts. This should include a clearer rationale for the difference in radiation limits for workers and the public and in “normal”, “emergency” and “existing exposure” conditions.

---

[1] In our view one area of Fukushima learning that still needs further work is the clear lesson that direct radiation impacts are not the most important public health consequences from nuclear accidents. This is not a new finding but it is one that the nuclear community has still not adequately addressed despite the experience from Three Mile Island and Chernobyl. As in those previous accidents, stress, stigma and the unintended health effects caused by an inappropriate reaction to the accident were responsible at Fukushima for more numerous and arguably much more serious health impacts than those caused directly by radiation exposure. And the scale of this problem was not linked to the magnitude of the release but to the public’s perception of the threat. If Europe ignores this lesson, we could face the same, or even worse, problems in the event of an offsite emergency even if its scale was far smaller than Fukushima.

[2] In contrast, an approach which results in an increase in the scale of EP&R arrangements for existing European nuclear sites but which is not linked to a reassessment of their risk will not only be difficult to explain but will actually tend to undermine public confidence in regulators and the industry. And if applied to new European designs this approach will also reduce the potential for their adoption within Europe and beyond.