STARR – Implementing a graded approach to radiation protection regulation

The underlying philosophy of a graded approach to radiation protection is that the resources directed at a particular activity to improve safety should be commensurate with the level of risk the activity presents. This is particularly important for complex users of radiation (regulators, universities, etc) who generally have limited radiation safety resources to cover multiple radiation uses.

While the graded approach is supported in theory, it has been rarely applied. Potential reasons for this include differing regulatory frameworks across jurisdictions, very few people possessing a broad understanding of all radiation uses, and a perception that implementing a graded approach is a complex task.

To assist with implementing a graded approach to radiation practices, we have developed STARR (Standardised Radiation Risk). When STARR is applied to a practice the algorithm generates a dimensionless value, enabling users to compare the risk associated with that practice against risks in other practices. Application of the STARR will allow resources to be allocated appropriately across a wide range of radiation uses. It is simple to use, and does not require an in-depth understanding of all radiation practices in order to categorise each practice relative to each other.

Risk rankings are used in conventional safety to ensure that the correct level of attention and control is applied to each hazard associated with a situation or practice. The development of STARR is intended to differentiate the required regulatory scrutiny to which different activities should be subjected. However STARR has wider application, particularly for radiation protection practitioners who are required to allocate limited resources across complex institutions such as universities and radioactive ore processing plants.

A presentation regarding STARR was made at the IRPA15 Congress, held (virtually) in South Korea in January 2021.

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