How can radiation protection professionals support the global demand for nuclear energy?

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The nuclear industry is being pushed forward by a global tailwind that includes plans for more conventional nuclear plants and an exciting trend toward developing small modular reactors. These include advanced safety features and novel reactor designs, often powered by new types of fuel.

This new technology must meet existing stringent safety and security demands and must be safe for the environment, workers, and general population. Wide acceptance of international standards, as well as standardization of designs and plant concepts, will help in the long run.

Radiation protection (RP) professionals play a key role from the very start of the design phase. There is rapid and continuous development in the field of RP. Improved computational tools enable better modeling and understanding of radiation shielding, detection, and effects. Nuclear safeguards and nuclear criticality safety are increasingly important.

A vibrant debate is underway among health physics and nuclear science professionals around the validity of the linear no-threshold hypothesis and the future interpretation of the ALARA (as low as reasonably achievable) principle. The underlying question is the scientific evidence regarding the harmfulness of minimal radiation doses and the level at which a regulatory framework should kick in.

One area of interest for me concerns nuclear power plants in regions where they have previously not been built, like the Middle East. We must now find the right measures for radiation protection and radioecology in arid climates, something heretofore little studied or understood. For this, like for all plants, environmental modeling and a fully functioning waste management and decommissioning system is crucial.

Advancing public understanding of applied science is a vital part of the role of RP professionals. Building understanding helps build trust in the technology and industry safety measures. The independence of RP professionals from developers and operators of power plants means they are ideally positioned to make the plants safer and help communities understand and trust them.

RP professionals also communicate ideas, concerns, and solutions across the scientific community. For decades, the debate about nuclear energy in several countries, including Germany, was dominated by biased, unscientific opinions. The job of RP professionals now is to inform the public discourse with precise, clear, and understandable fact-based communication. History shows that educating the public is vital, as is building public trust in what RP professionals have to say. For this, new channels of communication are becoming more important.

The expertise of RP professionals is increasingly important as interest in nuclear power grows, not only to meet the challenges ahead but to inspire the next generation that will guide the future of the industry.