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## Transitioning Regulatory Oversight: Moving from Prescriptive to Performance-Based Approach for Addressing Security Challenges in Indian SMRs

### Abstracts:

The deployment of small modular reactors (SMRs) holds significant promise for India's energy security and sustainability goals. However, the unique security challenges due to their modularity, potential deployment in urban locations, and evolving design characteristics pose unique security challenges. The existing prescriptive based regulatory requirements (nuclear security), tailored for conventional reactors, might not adequately address these SMR-specific security concerns. Therefore, it is imperative to conduct a thorough evaluation of existing nuclear security requirements to ensure they effectively address these concerns and facilitate compliance. This abstract presents a study aimed at evaluating the adequacy of India's nuclear security requirements in addressing security challenges associated with SMR deployment and proposes recommendations for enhancing regulatory oversight and compliance.

The study employs a mixed-methods approach, combining qualitative analysis of nuclear security requirements documents and guidelines with stakeholder's expectation and expert consultations. The analysis focuses on key aspects of India's regulatory requirements, including licensing requirements, security standards, emergency preparedness, and regulatory enforcement mechanisms. Additionally, international best practices are reviewed to benchmark India's regulatory approach against global standards.

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### Confirm that the work is original and has not been published anywhere else

Yes

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