



## **Additive Manufacturing: A Challenge to Nuclear Nonproliferation**

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### **Abstract:**

Additive manufacturing (AM) is a fast-evolving technology that allows businesses to automate and simplify the creation of complex objects. In the realms of nuclear weapons and nuclear enrichment technologies, AM methods have recently been applied. There are currently little international or domestic export regulations in place for AM's involvement in the nuclear sector, resulting in an unregulated proliferation pathway. Existing export regulations are based on broad concepts and procedures and do not consider the individual subtleties of various additive manufacturing techniques. It is necessary to examine and describe AM methods and their nuclear applications to create regulations and restrictions that will be successful in monitoring proliferation routes. This project involves identifying and ranking 32 AM approaches based on their potential influence on the nuclear fuel cycle. Export controls would target AM nuclear proliferation threats using this type of identification and categorization without affecting the whole industry and fuel cycle. Furthermore, due of its comprehensive approach to regulating and monitoring proliferation channels, legislation using this strategy would discover gaps in export regulations.