Contribution ID: **232** Type: **Contributor (Panel Session)**

Examining Inspection Frequency under the State-Level Concept

Wednesday 7 November 2018 11:42 (1 minute)

Over the past two decades, the IAEA has been moving away from mechanistic, criteria-based and facility-centric safeguards in favor of a more holistic, state-level approach based on achieving technical objectives. The introduction of state-level approaches began under integrated safeguards for states with a Broader Conclusion; however, the IAEA is working to apply the principles of state-level safeguards more broadly.
In the case of integrated safeguards, confidence in the absence of undeclared nuclear facilities and activities can enable the IAEA to modify timeliness goals for verification at declared facilities, where those goals had previously been established under an assumption that undeclared facilities and activities could exist. If the timeliness goals can be relaxed, then the frequency of inspections at those facilities may be reduced. A tailored approach to relaxing timeliness goals includes an evaluation of a State's nuclear fuel cycle and technical capabilities and must be considered in the broader context that couples timeliness (related to inspection frequency) with inspection intensity to achieve inspection goals. In this context, we focus on the development of an analytical basis for modifying timeliness goals under state-level approaches, accounting for both the time to acquire nuclear material of different types and forms and the time to acquire and employ the capability to weaponize the material. We apply our analytical basis to a set of case studies in the form of notional states for which the Broader Conclusion has been reached, because for these states, the IAEA has established a level of confidence in the absence of undeclared nuclear facilities and activities. Our case studies are intended to be representative of a range of scenarios of nuclear fuel cycle sophistication, from states with relatively low technical capability (e.g., having only a research reactor with production of medical and industrial isotopes) to states with a complete nuclear fuel cycle. Existing state-level approaches for similar states provide a benchmark against which to compare our analytical approach. A similar methodology could be adapted for more general application as the Agency progresses in implementing the State-Level Concept.

Which "Key Question" does your Abstract address?

NEW1.2

Topics

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Which alternative "Key Question" does your Abstract address? (if any)

Authors: Dr JARMAN, Kenneth (Pacific Northwest National Laboratory); Mr SCHANFEIN, Mark (Idaho National Laboratory); Mr OTTO, Robert (Pacific Northwest National Laboratory)

Presenter: Dr JARMAN, Kenneth (Pacific Northwest National Laboratory)

Session Classification: [TEC] Visualization for Information Integration

Track Classification: Leveraging technological advancements for safeguards applications (TEC)