



Contribution ID: 2

Type: **Wedge Participant**

## MYRRHA Safeguards Approach by Design

Once started as a small irradiation facility, which was already based on the accelerator-driven system concept and had a dedicated objective to produce radioisotopes for medical purposes, the purpose of our MYRRHA programme is to demonstrate the ADS concept at pre-industrial scale, to demonstrate transmutation and - as the reactor is a fast neutron source –to also serve as a flexible multipurpose irradiation facility.

The Belgian government has granted in 2010 a dedicated five-year budget to support the MYRRHA programme; this support has been renewed for 2015 –2017. In the meantime, the MYRRHA team has developed a detailed implementation strategy, with a phased approach to reduce the technical risk, to spread the investment cost and to allow a first R&D facility available by 2024.

In this new approach, the MYRRHA facility will start with the 100 MeV accelerator (phase 1) and will be followed by the 100-600 MeV accelerator section (phase 2) and the reactor (phase 3). Phase 1 is aimed for construction and commissioning by 2024 and will represent a stage-gate for the decision to implement the two following phases. This scenario allows spreading of investment costs, but also minimising the risks (accelerator reliability and reactor innovative design options). This scenario has been confirmed with the Belgian government representatives in charge of the MYRRHA programme.

Given the large quantities of nuclear material present in the core and the adjacent storage facilities, it is of utmost importance to develop a good safeguards approach for the MYRRHA facility. The safeguards approach should evolve with the evolving design of MYRRHA by the application of Safeguards-by-Design. Several points of attention have already been identified and possible solutions have been described.

In this paper, we present the present status of the MYRRHA programme and the perspectives for implementation from 2015 on. The safeguards points of attention are discussed, together with the solutions that have been developed. Given the fact that the MYRRHA design is work in progress, this applies also for the development of the MYRRHA safeguards approach.

### Topics

NEW1

**Primary author:** Dr DE BRUYN, Didier (Belgian Nuclear Research Centre (SCK•CEN))

**Co-authors:** Prof. AÏT ABDERRAHIM, Hamid (Belgian Nuclear Research Centre (SCK•CEN)); Mr VAN DER MEER, Klaas (SCK.CEN)

**Presenter:** Dr DE BRUYN, Didier (Belgian Nuclear Research Centre (SCK•CEN))

**Session Classification:** [NEW] The Safeguards Challenges of New and Advanced Reactors

**Track Classification:** Preparing for safeguards new facilities, processes and campaigns (NEW)