Internship / Master thesis in collaboration with ONDRAF

Assessment of Neutron Activation Analysis as a Non-Destructive Technique for the verification of the radiological limits imposed on category A waste

The long-term management of low-level waste (also called Category A waste) foresees the disposal in a near-surface facility in Dessel. The licence application for this facility is currently ongoing. In this context, it is clear that all the waste for surface disposal should comply with the a series of physico-chemical and radiological compliance criteria, set out in the safety report of the surface disposal facility. To verify the compliance of the waste to the criteria, a number of controls should be performed before the waste enters the surface disposal facility. In order to perform these controls according to the ALARA principles, the preference is given to non- destructive techniques (NDT), which could be applied to the verification of the criteria for the currently existing and the future waste, a large portion of which consists of conditioned 400 L drums.

This internship focuses on the (re-)evaluation of Neutron Activation Analysis (NAA) as a NDT for the verification of the radiological limits imposed by the compliance criteria for category A waste. Some preliminary work has already been performed on this topic. The objective of this internship will be to perform a sensitivity analysis to study the applicability of NAA for the radiological controls on different types of category A waste. If possible within the timeframe of this internship, the verification of a number of physico-chemical criteria by means of NAA will also be evaluated.

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