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Preparation of the safe and sustainable disposal of LLW in the future surface disposal facility in Belgium

ONDRAF/NIRAS plans to build and operate a surface disposal facility for the low-level radioactive waste in Dessel. The licensing process is underway and should lead to a construction and operation license by mid-2023. The construction of the disposal facility could start in 2024 and its operation could be expected in 2027. The license (and the safety report) will set the conditions that the waste must respect to ensure a sustainable and safe disposal. Besides radiological limits, physico-chemical criteria are also defined. Indeed, the waste can't unduly affect the performances of the Engineer Barriers that play a major safety function and can't perturb the expected evolution of the disposal system. Cellulosic substances, sulphates, chlorides, ASR (Alkali-Silica-Reaction) and DEF (Delayed Ettringite Formation) reactions constitute the main sources of potential perturbations.

To ensure the absence of perturbations and to allow the safe and sustainable disposal of the waste a disposability program was defined. This program is illustrated in the following figure. The different steps are the establishment of conformity files, development of filling plans, realization of (non)-destructive controls to confirm the disposability of the waste and definition of measures to allow non-conform waste. The disposability program considers the legacy waste for which missing information as to be collected as well as future waste for which additional measures should be taken to ensure the production of conform waste. The disposability program will be described in this paper.

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