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SAFE HANDLING, TREATMENT, CLEARANCE AND RECYCLING OF CONTAMINATED METALS FROM NUCLEAR INSTALLATIONS

Treatment of contaminated metals by melting in Sweden started 1987 as a joint initiative by the licensee at that time (Studsvik) and the regulators in Sweden. One year later, the first treatment campaign for international licensees took place. Since 2016, the metal treatment facility in Sweden is owned and operated by Cyclife Sweden AB, a company within the EDF Group.

Already from the first day, safety has been the priority within the facility as well as for the associated services. Over the years the facility and the operations have expanded, and the capabilities developed. Even though the main objective with the facility is to treat metals aiming for clearance, there could be some radiological risks that needs consideration. However, the main safety risks are associated with the transport of large and heavy components, working at height when doing disassembly as part of the treatment process and not at least the risks related to metal melting and the handling of residues to which most of the radioactivity are concentrated.

Another safety aspect relates to the clearance and safe recycling back to the conventional industry of the metals treated regarding the process of release from regulatory control. A robust process with integrated physical and administrative barriers is fundamental to secure safety and stakeholder confidence.

The paper will present a typical process from the disassembly of a large and contaminated component until the metals have been recycled into new products, to the benefit of the society. It will also provide a comparison with other approaches for the management of contaminated metals from a safety perspective. The paper will also provide an overview of the mitigation process for the major safety risks related to handling and processing of large contaminated components. The gained experience will be shared in a few case studies.

The applied processes contributes to sustainability and a circular approach by promoting safe management solutions aiming for reuse and recycling of valuable metals along with waste minimisation.

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