

DEVELOPMENT, OPTIMIZATION, AND HARMONIZATION OF INNOVATIVE TECHNIQUES FOR RADIOACTIVE WASTE CHARACTERIZATION WITHIN THE EURAD-2 PROGRAMME

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In the framework of the EURAD-2 partnership, the ICARUS (Innovative ChARacterization techniques for large volUmeS) work package aims at further developing, optimizing and harmonizing innovative techniques for the radiological, physical and chemical characterization of large volume of low/intermediate-level mixed waste, as it could be critical for the safe implementation of radioactive waste management programmes of the member states. Both Destructive Techniques (DT), Non-Destructive Techniques (NDT), and Scaling Factors (SF) will be investigated. ICARUS has its roots in several previous research projects, hence a comprehensive state-of-the-art will be performed to identify the most promising characterization techniques for industrially relevant decommissioning situations. Four use cases will be considered according to the end users needs: i) enabling fast and sufficiently accurate gamma activity distribution in complex large packages (including mixed wastes as heterogeneous legacy waste) by NDT (incl. in-situ and remote radiological characterization); ii) improving and simplifying NDT for determining physico-chemical properties; iii) improving sensitivity, accuracy, and uncertainty and coping with expensive and time-consuming conventional radiochemical analysis of long-lived Difficult To Measure (DTM) radionuclides by DT; iv) improving accuracy, uncertainty, and reliability of the SF approach to estimate DTM radionuclides in raw mixed waste. The research activities will be carried out by 29 organizations from 17 countries. The large participation of research entities and technical support organizations fosters a complementary and innovation-based approach to identify innovative cutting-edge solutions for the full-scope characterization of radioactive waste. The participation of waste management organizations and the engagement of end users from several member states ensures that relevant use cases are considered to address relevant industrial needs. Moreover, the large participation of universities ensures the involvement of young professionals, as Ph.D. candidates and postdoc researchers. Specific education and training materials and opportunities will be provided to foster their career advancement. This abstract is aimed at presenting how the planned activities will be implemented.

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