

# International Conference on Radioactive Waste Management: Solutions for a Sustainable Future (CN-294)



## International Conference on Radioactive Waste Management: Solutions for a Sustainable Future

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## Treatment of liquid radioactive waste containing organic substances

Polish research laboratories and hospitals produce liquid organic waste among which are organic solvent waste and aqueous waste contaminated with organic pollutants (waste with high COD), sometimes containing long-lived alpha emitters that require different treatment pathways. The presence of organic substances affects further stages of radioactive waste processing and the safety of its final disposal. Therefore, it is advisable to render this admixtures harmless in an appropriate manner before the next stages of the treatment. The removal of organic compounds could be achieved by sorption method or in advanced oxidation process. In present work three methods of removing organic compounds from the low-level liquid radioactive waste were studied: i) physical separation of organic compounds by adsorption on activated carbons; ii) chemical removing of organic compounds by ozonation and ultraviolet light decomposition and iii) separation of organic substances from inorganic compounds (including radioisotopes) using a electromembrane process –electrodialysis (ED). The research on the treatment of liquid radioactive waste was accompanied by development of analytical methods necessary for process control and characterization of the waste at each stage of processing. The main techniques of characterization of liquid waste streams was the Alpha and Gamma spectrometry, Inductively Coupled Plasma Mass Spectrometry ICP-MS, and Total Organic Carbon (TOC) spectrometry.

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