Contribution ID: **266** Type: **Poster**

The determination and recovery of radioactive metals from industrial wastes stored in Poland

The heavy metals present in the industrial and geological wastes are a huge problem from not only the environment protection point of view but also from the point of view of the industry and the society. The various wastes as phosphogypsum, flotation tailings from cooper production, uranium tailings from uranium mining are stored on the big are and become to be dangerous for our environment. They could content significant amounts heavy metals, among them radioactive uranium [1]. Moreover new technologies implemented into industry may result in the emergence of entirely new types of waste, for instance flowback fluid from hydraulic fracturing of gas rock bed [2]. The analysis showed that it contains radioisotopes eg. U-238, Ra-226, Pb -214, Bi-214 and the activity was higher than natural background for deep water. The knowledge about the composition of the environmental samples is very important in the context of their processing scheme. These samples can contain organic matter and mineral pollutants, sometimes they are characterized by very high salinity. This can make the analysis of these samples, especially measurement of low concentrated elements such as uranium very difficult. Because of that sometimes complex analysis are necessary. It could involve several steps of separation and different analytical procedures. Such methods like TOC measurements, ICP-MS, ion chromatography, alpha and gamma spectrometry were employed for characterization of the fluid samples.
It seemes that the most effective way of management of industrial wastes could be the recycling them. They could be considered as source of valuable metals nowadays. The processing these waste in to recovery these metals is a big challenge and involve many hydrometallurgical processes [2]. way of management of industrial wastes is the recycling them. They could be considered as source of valuable metals nowadays. The processing these waste in to recovery these metals is a big challenge and involve many hydrometallurgical processes [2].

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Session Classification: Session IV - Characterization in Industrial Facilities and in the Environment

Track Classification: NORM Characterization, Measurement, Decontamination