



**Seminarium Zakładu Energetyki Jądrowej i Analiz Środowiska (UZ3)
Departament Badań Układów Złożonych (DUZ)**

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**The measurements of radionuclides in fly ash from combustion of
solid fuels in conventional power plants**

Abstract:

The current electricity and heat generation in Poland is predominantly based on the use of hard coal and lignite. It contributes to the production of huge amounts of combustion by-products including fly ash.

The main objective of the presented project was a dosimetric analysis of fly ash from coal combustion with or without additive of other co-combustion materials, such as biomass. One of the motivations of the study was to determine possible further use of the fly ash, for example in construction materials fabrication.

Collected samples were divided according to combustion fuel as well as sectors of electrostatic precipitators (ESP) they were collected from. Samples have been analysed by gamma-ray spectrometry, alfa-ray spectrometry and mass spectrometry to identify and determine the concentration of natural radionuclides, such as K-40, Ra-226 and Th-228.

On the basis of the results, proper coefficients were determined to qualify whether studied samples of fly-ash could be used in the production of building materials. Using different measurement methods, the concentration of uranium and thorium was estimated.

Obtained results indicate that natural radionuclides can be found in tested fly ash samples. Moreover, there is a relation between radionuclides concentration and fly ash granulation. The analysis of the result suggests that studied samples of fly ash can be used in a production of building materials and also as an unconventional resource of uranium and thorium.

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