

From ash to eco-friendly solution for hazardous metals removal

January 21 2015, by Inês Crespo

Scientists have suggested a new method to transform power plant ash into materials that could be used for nuclear waste treatment or soil remediation.

The world's [power plants](#) produce about 600 million tones of [coal ash](#) every year. If nothing is done about it, this sort of waste might damage the environment. A group of scientists from Greece and Romania suggests a [method](#) to turn the ashes produced into an eco-friendly solution.

Ashes are chemically similar to volcanic precursors of natural zeolites. These are typical adsorbents in separation and refinery facilities. The scientists used ash taken from the Iasi power plant in Romania and through a simple, low-cost method successfully produced adsorbents from it. They have modified the power plant ash by hydrothermal treatment and ultrasonic activation in an alkaline medium (5M NaOH). Furthermore they investigated the effectiveness of the new synthesized sorbents in removing certain metals (Ba, Cd, Cr, Cs, Eu and U) from aqueous solutions. Thanks to NMI3 support, the group could conduct instrumental neutron activation analysis (INAA) experiments at the Reactor Institute Delft to characterise the materials.

The results show that the new materials have enhanced properties with regard to the original [ash](#) and proved very efficient in removing hazardous metals from aqueous media. The sorption efficiency was as high as more zeolite formed.

This method could be a cheaper alternative e.g. for nuclear waste treatment or soil remediation while also reducing [waste](#) from power plants.

More information: F. Noli, G. Buema, P. Misaelides and M. Harja (2014), "New materials synthesized from ash under moderate conditions for removal of toxic and radioactive metals," *Journal of Radioanalytical and Nuclear Chemistry*, 1-9 [DOI: 10.1007/s10967-014-3762-1](https://doi.org/10.1007/s10967-014-3762-1)

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