

Multiple regression methodology: the removal of heavy metals through electro dialysis

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Fly ashes from Municipal Solid Waste Incinerators (MSWI) are considered hazardous waste and current practice is to deposit them in landfill. The Electro dialytic Process (EDR) is a remediation technique, which was first applied for contaminated soil remediation [1], [3]. The principle combines electric current with dialysis and aims to remove heavy metals from contaminated solid media. In the present study, an eighteen electro dialytic experiment batch was carried out with different combination of variables with presumable influence in EDR. Variables such as "Ash %", "Current", "Duration", "Length" and "Metal" were considered. For a general analysis, linear regressions and F test was carried out individually for each variable to study its influence on the removal of each studied metal (Fe, Mn, Cu, Zn, Cd, Cr, Pb and Ni). "Length" was found to be the variable with the most effect on EDR efficiency, followed by "Ash %". Furthermore a multiple regression design approach [2] was used to evaluate EDR performance throughout remediation time. It might be concluded that a given variable affects the removal of the metal by positive or negative species.

References

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