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| <b>Program</b>  | <b>Program NUCLEU PN 09-13 03 22</b>  |
| <b>Project title (ENG):</b>                           | <b>Removal of fluoride ion from aqueous systems by electrochemical processes</b>  |
| <b>Project title (RO):</b>                            | <b>Cercetari privind indepartarea ionului fluorura din sisteme apoase prin procese electrochimice</b>   |
| <b>Duration</b>                                       | 2015  |
| <b>Team Leader</b>                                    | Senior Researcher Monica Ihos, Chem .Eng.   |
| <b>Summary</b><br>(short description) ENG             | The project aimed at decreasing fluoride ion concentration lower than the limits set by the national norms and standards with respect to water quality by using electrochemical methods. The optimal operating parameters were determined for the process of removing fluoride from ground water by electrocoagulation with sacrificial anode made of aluminium placed horizontally and vertically in cells, respectively. The residual fluoride concentration in the electrochemically treated water was lower than 1.2 mg/L, which is the maximum allowable fluoride concentration in drinking water set by Law 458/2002 – concerning water quality, regardless of the electrode configuration. The specific energy consumptions were comparable for the two electrode configurations, 1.40 and 1.30 kWh/m <sup>3</sup> , respectively, at an initial fluoride concentration of 5.1 and 9.6 mg/L, respectively, current density of 780 A/m <sup>3</sup> and 60 min electrolysis duration. |
| <b>Summary</b><br>(short description) RO              | Proiectul si-a propus reducerea concentratiei ionului de fluorura sub limitele prevazute de normele si standardele nationale privind calitatea apelor prin metode electrochimice. Au fost determinati parametrii de operare optimi în procesul de indepartare a fluorurii din apa de adancime prin electrocoagulare cu anod de sacrificiu aluminiu in celule cu electrozi orizontali si verticali. Concentratia reziduală a fluorurii in apa de adancime tratata electrochimic s-a situat sub limita de 1,2 mg/L, valoare impusa ca si concentratie maxima admisa de fluorura in apa potabila prin Legea 458/2002 – Legea privind calitatea apei potabile indiferent de configuratia electrozilor. Consumul specific de energie este comparabil pentru cele doua configuratii de electrozi, 1,40, respectiv 1,30 kWh/m <sup>3</sup> pentru concentratia initiala a fluourii de 5,1, respectiv 9,6 mg/L la o densitate de curent de 780 A/m <sup>3</sup> si 60 min de electroliza.           |
| <b>Dissemination of results</b>                       |   |
| Conferences (platform, poster, abstract / full-paper) | <b>Ihos, M.,</b> Andres, L., Fluoride Removal from aqueous media by electrogenerated Al(OH) <sub>3</sub> , <i>the 21<sup>th</sup> International Symposium on Analytical and Environmental Problems</i> , 28 September 2015, Szeged, Hungary, Book of Proceedings, 239-242, ISBN: 978-963-306-411-5<br>poster and full-paper   |
|   | <b>Ihos, M.,</b> Pascu, L.F., Lehr, C., Fluoride Mitigation in Water by Electrocoagulation, <i>Conferința Internațională Eco Energy „Echipamente, Tehnologii, Soluții de Mediu și Energie Regenerabilă”</i> , 22-24 iunie 2016, Timisoara, Brosura de prezentare, 20-21, ISBN: 978-973-125-495-1<br>abstract  |