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## Natural radioactivity in Tunisian and in some imported phosphate fertilizers used in Tunisia

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The radioactivity concentrations of  $^{226}\text{Ra}$ ,  $^{232}\text{Th}$  and  $^{40}\text{K}$  in different phosphate fertilizers, triple superphosphate (TSP), diammonium phosphate (DAP), monoammonium phosphate (MAP) and in phosphoric acids produced and used in the agricultural soils in Tunisia were measured. Other exported and used phosphate fertilizers in the country were also subject of radioactivity concentrations measurement and they consisted in some NPKs. Gamma spectrometry using a high purity germanium (HPGe) detector was used for the measurement. It was found that generally the Tunisian fertilizers contain the highest activity concentrations with the exceptions of  $^{40}\text{K}$ . TSP contains the highest concentration of  $^{226}\text{Ra}$  (186.2 14.5 Bq/kg) and of  $^{232}\text{Th}$  (33.7 3.5 Bq/kg). The highest amount of  $^{40}\text{K}$  was found in one type of NPK (9969.5 Bq/kg). The radium equivalent index was calculated for all the analysed fertilizers and was found to be the highest in the imported NPKs samples (the maximum value was about 775 Bq/kg) because of their high content in  $^{40}\text{K}$ . For the Tunisian fertilizers the maximum radium equivalent index was about 238 Bq/kg in TSP.

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