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## DISTRIBUTION OF TOTAL AND AMMONIUM BICARBONATE-DTPA-EXTRACTABLE SOIL VANADIUM FROM GREECE AND EGYPT AND THEIR CORRELATION TO SOIL PROPERTIES

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### ABSTRACT

Vanadium (V) is a trace element involved in soil pollution, originating from either soil parent material or anthropogenic sources. The aim of this study was to investigate the distribution of total and ammonium bicarbonate-TPA-extractable (AB-DTPA) V in soil profiles of representative Greek and Egyptian soils and their relationships to soil properties. Twenty-one soil profiles from Egypt and Greece (representing the main soil orders, that is, Entisols (developed on fluvial, lacustrine, and marine deposits) and Aridisols for Egyptian soils and to the soil orders Entisols, Alfisols, Inceptisols, Vertisols, Mollisols, and Histosols for Greek soils) were sampled and analyzed for total and AB-DTPA-extractable V, and the relationship of V levels to soil properties were examined. Total V concentrations ranged from 23 mg **kg<sup>-1</sup>** in the marine deposits to 179 mg **kg<sup>-1</sup>** in the lacustrine deposits. Total V levels significantly positively correlated to clay and silt content, cation exchange capacity, and free iron and manganese oxides and were negatively correlated to sand, organic matter, and calcium carbonate content. The AB-DTPA-extractable V varied from 0.55 mg **kg<sup>-1</sup>** in the Greek Entisol to 4.4 mg **kg<sup>-1</sup>** in the Egyptian lacustrine deposits and were significantly positively correlated with total V concentration, soil pH, clay and silt content, and cation exchange capacity (positively) and negatively correlated with sand content. Distribution of total and AB-DTPA-extractable V related mainly to particle size distribution, sesquioxides content, and soil **pH**. These results suggest that V could be a concern for many of the soils studied because in a large number of samples, V concentration values exceeded the international regulatory standards for remediation.

