



Contrasting sulfur isotopic profiles in industrial and non-industrial Beijing soils

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ABSTRACT

Differing ranges of S isotopic composition from two soil profiles, one from an industrial area and the other from a rural area south of Beijing are utilized for characterizing S sources and identifying soil S turnover. The industrial profile from an Fe ore sintering plant within the steel industrial area in Beijing displays S isotopic values varying from 16.6‰ to 31.3‰ (sulfate) and from 7.6‰ to 14‰ (sulfide). The rural profile from the Yongledian section in the Tongzhou District, southeastern Beijing displays a vertical pattern in S isotopic compositions changing from 7‰ to 9.2‰ (sulfate) and from -7.1‰ to 5.8‰ (sulfide). The $\delta^{34}\text{S}_{\text{SO}_4^{2-}}$ and $\delta^{34}\text{S}_{\text{sulfide}}$ values from near the Sintering Plant section reveal that S sources are mainly from dissolution of gypsum, rain water and coal and/or coal combustion products. This reflects input of industrially produced S in the soils. The $\delta^{34}\text{S}_{\text{SO}_4^{2-}}$ and $\delta^{34}\text{S}_{\text{sulfide}}$ values from the Yongledian section reflect that S of topsoil and deep soil samples are mainly from rain water and biogenic S, which reflect the original natural characteristics.

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