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Does specific pedogenesis occur in Technosols developing on iron industry wastes deposits?

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Technosols include soils dominated or strongly influenced by human-made materials. But whether pedogenesis of Technosols is governed by specific processes in comparison to those occurring in natural soils remains unknown. With this aim in view, a Technosol derived from purely anthropogenic materials was investigated. It has formed on a former settling pond of sludge generated by iron industry. Probably abandoned in the mid-20th century, this pond has been covered by a diversified forest. The soil is composed of contrasted layers. An organic layer has developed at the surface. Composition and properties of the soil materials were studied in the first two meters of the profile under root influence. Elemental composition was dominated by Fe, Mn, Ca and Si and revealed very high contents in heavy metals, up to several percents for Pb and Zn. The soil was slightly alkaline (5-30 % carbonate). Mineralogy was characterized by poorly crystalline phases mainly aluminosilicates, Fe and Mn (hydr)oxides, Ca carbonates and sulfates. Bulk density was lower than 0.7 g cm⁻³. Porosity was higher than 75 % (v/v) with a majority of micropores. Water retention capacity and specific surface were high. Thus, despite its anthropogenic parent materials, this Technosol displays properties comparable to those developed in natural soils, such as volcanic, carbonated or manganese bearing soils. But conditions of formation of these soils are rarely concomitant in natural environments. This leads to wonder if human factor (nature of parent material, mixing) could create particular conditions allowing unusual combinations of natural soil-forming processes.